OCTOBER • 1959

FIREMEN

VOLUME 26, NUMBER 10, COPYRIGHT 1959 NATIONAL FIRE PROTECTION ASSOCIATION PRINTED IN U. S. A.

Barn Fire in Bloomfield, Connecticut — *see page 7*

TIONAL FIRE
OTECTION
SOCIATION

64th
year

"OUTSIDE" FIRE PROTECTION › › › Page 8

YOUR BIGGEST FIRE › › › › › › Page 10

Peerless performance of two Mack 750-gpm pumpers convinced Palmyra's Citizens Fire Company No. 1 to add this new Model B-95 1000-gpm unit to its equipment. Radio-equipped, this 276 hp Thermodyne-engine-powered Mack pumper is the latest acquisition in a Mack program started in 1950.

Palmyra adds another dependable "custom-built" MACK

Large or small, paid or volunteer, every fire department needs the dependable performance of custom-built Mack fire apparatus. And there's no reason why they can't have it.

Every Mack apparatus is custom-built to your specific needs—cab-forward or conventional, automatic or standard transmission, air or hydraulic brakes, and the body style engineered expressly for your department.

Citizens Fire Company, Palmyra, Pennsylvania, for example, has just taken delivery of its third Mack pumper, a Model B-95 1000-gpm unit. Powered by the great Mack 276 hp Thermodyne® engine, this stalwart Mack model is quick starting, easy handling and a solid worker, especially when it must pump at full capacity—hour after hour.

Why not investigate the addition of steady-performing custom-built Mack apparatus to your department? Performance records show Mack apparatus to be the most dependable on the road. Mack Fire Apparatus, Allentown, Pennsylvania. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ontario.

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FIRST NAME FOR
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... will handle as much as 40% of your calls — many 20 years ... are still in use — replacement parts are available instantly ... and they use only CLEAR WATER!

...member — there is only one INDIAN FIRE PUMP! Insist on ...IANS — *they have no equal.*

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(Sliding Pump Type)

...e have improved the brass sliding pump on the **No. 90 INDIAN** so that a boy can use it with ease at all times. ...hen you buy your next lot of **INDIANS** you will be very ...ch pleased with them and you will find it is a pleasure ...operate them.

Both Types Approved by Underwriters' Laboratories.

Fire fighting authorities who have experimented with a "WET WATER" powder mixed with the water in an INDIAN FIRE PUMP tank report it does an excellent job.

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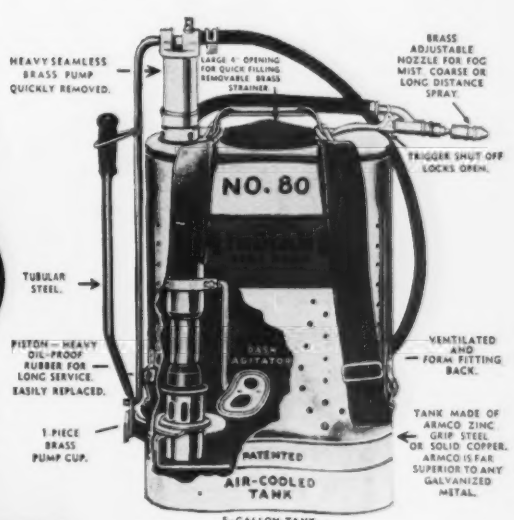
(Lever Type Pump and Handle)

Heavy steel pump lever. Ventilated tank. 5 gal. capacity. Continuous high pressure. Armco zinc-grip steel or glistening solid brass tank. Strongest construction throughout. Has no equal.


HEAVY SEAMLESS BRASS PUMP QUICKLY REMOVED.
LARGE 4" OPENING FOR QUICK FILLING. REMOVABLE BRASS STRAINER
BRASS ADJUSTABLE NOZZLE FOR FOG MIST, COARSE OR LONG DISTANCE SPRAY.
TRIGGER SHUT-OFF LOCKS OPEN.
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VENTILATED AND FORM FITTING BACK.
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TANK MADE OF ARMCO ZINC GRIP STEEL OR SOLID COPPER. ARMCO IS FAR SUPERIOR TO ANY GALVANIZED METAL.
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AIR-COOLED TANK

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- ***"We consider INDIAN FIRE PUMPS to be the most important equipment in our department".***
- ***"We use nothing but INDIANS for a portable extinguisher. They're the best".***

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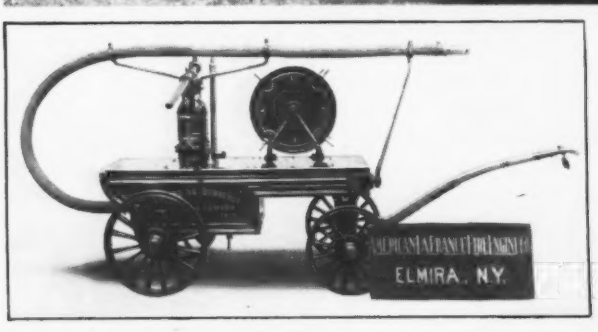
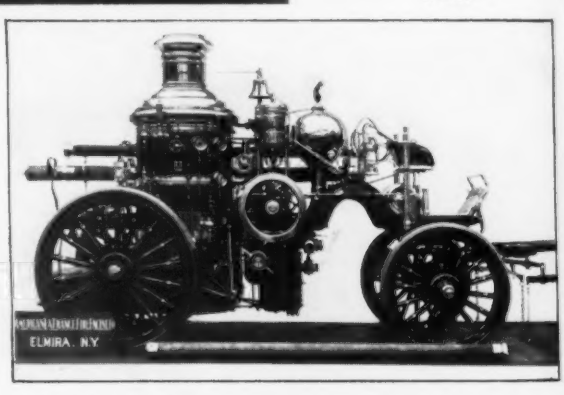
The 125th Anniversary of

We have chosen Fire Prevention Week for celebrating our 125th year of cooperation with the fire service. Since 1834 we have made many changes and improvements in our fire engines. Briefly illustrated are types of fire engines and ladder trucks from the earliest to the newest modern fire fighter. The famous three horse hitch and steamer symbolizes a glamorous era in the fire service history. We built our last steamer in 1914.

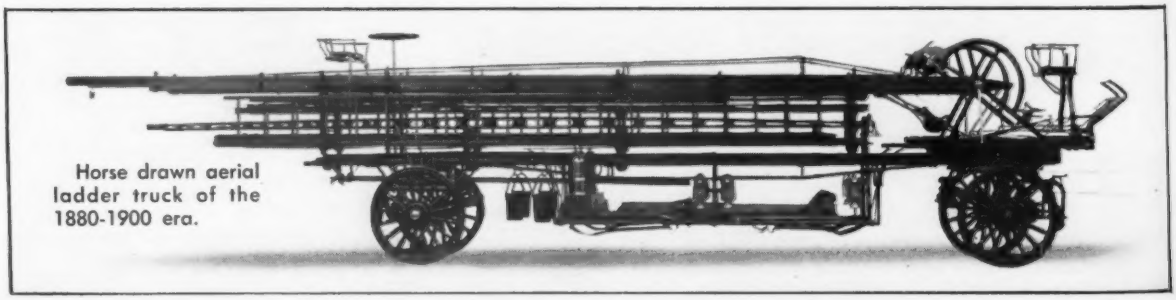
Photo courtesy L. Schock



One of several types of hand drawn, hand operated pumper or "hand tub" we built from 1834 to 1906. The pump capacity ranged from 200 g.p.m. to 500 g.p.m. at 100 p.s.i. pressure. Many of the "tubs" show skill and craftsmanship on the walnut and maple inlay work on mahogany and other wood.

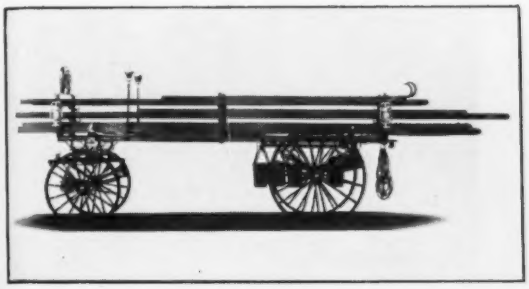


The "Metropolitan" steamer famous the world over. One occupies a place of honor in the Smithsonian Institute.

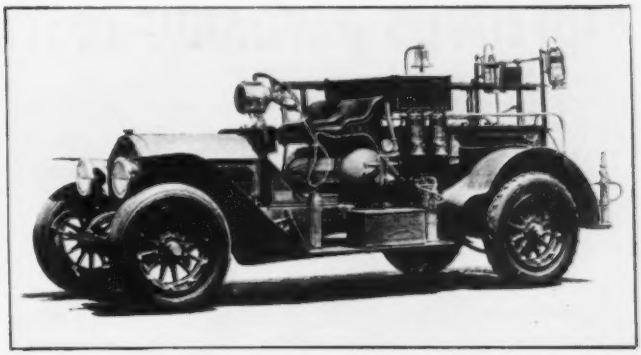


Horse drawn aerial ladder truck of the 1880-1900 era.

# of AMERICAN LA FRANCE

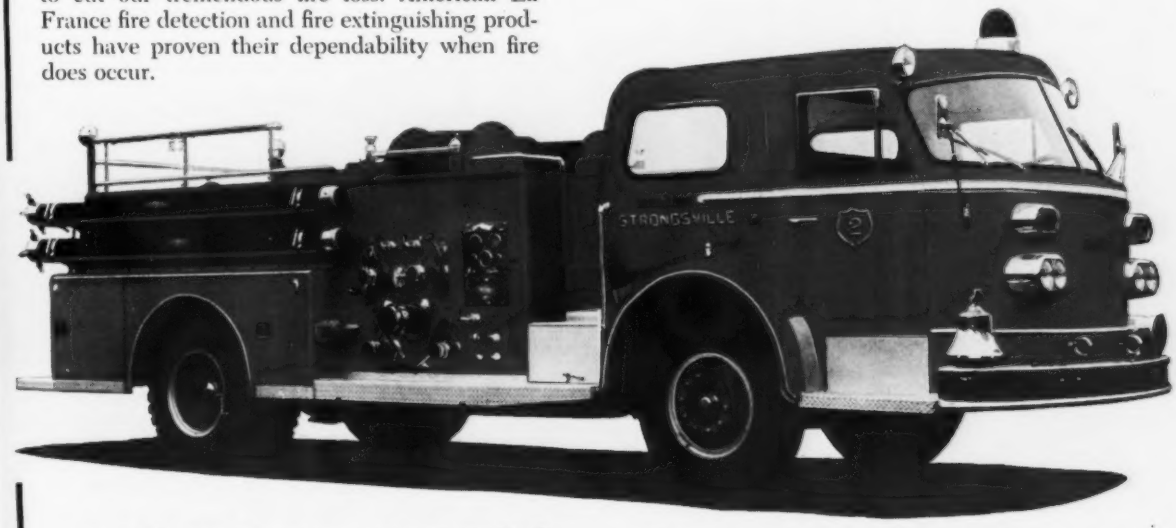


Hand drawn ladder truck. This type has evolved to our modern 4-wheel service aerial ladder truck.



The first production motorized American LaFrance fire engine was shipped to Lenox, Mass. in 1910. It is still in the fire department at Lenox.

Experience has proven that observance of fire prevention rules will save thousands of lives and keep many jobs for full employment. We sincerely wish the program of education to continue to cut our tremendous fire loss. American La France fire detection and fire extinguishing products have proven their dependability when fire does occur.



Our 125th Anniversary year sets new standards of Excellence and Leadership in the 900 Series fire engines. Experience in building the cab-ahead-of engine design for 12 years provides new features for greater performance and safety; less maintenance, greater utility and more efficient operation. Write for 900 Series brochure for full details.

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A DIVISION OF STERLING PRECISION CORPORATION
ELMIRA, N.Y., U.S.A.

LaFrance Export Corporation Elmira, N. Y.

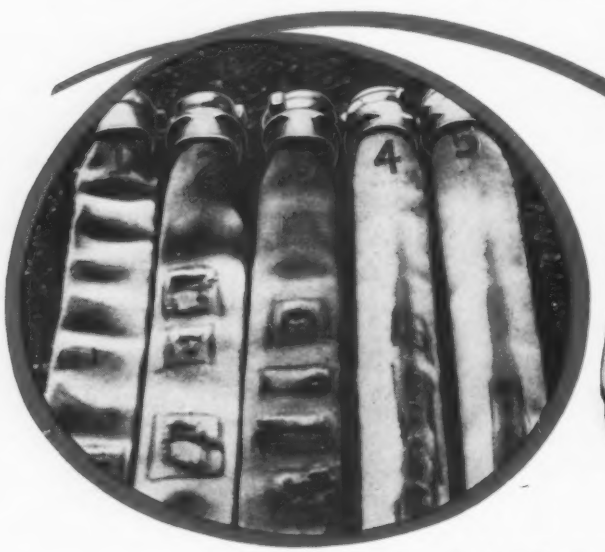
LaFrance Fire Engine and Foamite Limited
Toronto 9, Ontario, Canada

New, Bonded All-Dacron*

Ambassador

Ranks best in tortuous abrasion test!

50-foot lengths of hose were dragged on asphalt pavement at speed of 5 miles per hour. Test included 5 types of 2½" hose: 1. Fyr-Fyter 100% Dacron, Tuff-Weave industrial, single jacket; 2. Dacron/Cotton, double jacket; 3. Cotton, double jacket; 4. 100% Dacron, double jacket (unbonded); 5. Fyr-Fyter Ambassador, 100% Dacron, BONDED *double jacket.*



Inside jacket was exposed in hose No. 2 and No. 3 at 3 miles; in hose No. 4 at 6 miles. Test was stopped after 10 miles. All hose except Nos. 1 and 5 appeared to have exceeded their maximum service life. Burst tests further proved Nos. 2, 3 and 4 unserviceable. Hose No. 1 and No. 5 showed no appreciable loss in burst strength!

This tortuous test proves you can expect more durability and longer service life from Fyr-Fyter's new Ambassador Hose. Its rugged resistance to dragging and scuffing is due to an entirely new way of fabrication. Both inner and outer jackets are 100% Dacron which makes them practically immune to wear. The two jackets are also permanently rubber bonded. This means they can't slip or rub to cause any concealed wear. The bonding also gives added falling ember protection. Bonded, 100% Dacron hose is an exclusive product of Fyr-Fyter!

NO DRYING REQUIRED

The extremely low absorbency of all-Dacron jackets eliminates drying operations, and also the need for stand-by hose. Rack it right after use with no fear of mildew.

Other outstanding Ambassador features include lighter weight for easier handling, amazing strength without bulk, flexibility without kinking, compactness and resistance to chemicals. Write today for complete details and prices. **DuPont trademark for its polyester fiber.*

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FIREMEN

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A report of major significance to fire departments will be published by NFPA this month. It is a thorough analysis and summary of the school fire tests conducted in Los Angeles, California, during the past spring and summer. It will be recalled that Deputy Chief Raymond M. Hill of the Los Angeles Fire Department described these tests at the recent NFPA Annual Meeting, and that an informal summary, "Open Stairway School Fire Tests" was printed in the July issue of the NFPA *Quarterly*.

This complete, detailed report will provide fire department officers with authoritative, timely data for enforcing regulations and for convincing school authorities of the potential of fire in a modern school building. The report will be a cloth-bound, 6- by 9-in., 272-page book which will include 165 tables, 55 graphs, 13 drawings, 9 photographs, 16 sprinkler performance layouts, and 26 tables covering automatic fire detection performance. The Los Angeles Fire Department, in cooperation with the manufacturers of fire protection equipment, conducted more than 60 fire tests in the building. Professional fire protection engineers helped to correlate and analyze the results of the many tests.

This technical report should be a permanent reference book in every fire department library and certainly will be of value to fire protection engineers, school authorities, and others concerned with school fire safety. Watch for a more detailed description of the book in the next month's issue of FIREMEN magazine.

●

For any fire department, a barn fire can be extremely difficult to control. Accordingly, rural departments, limited in manpower and apparatus, rely on sound pre-planning, knowledge of water sources, and mutual aid to get the best results. In Connecticut, volunteer and paid fire departments have developed good communication and coordination for handling such fires in rural areas.

The barn fire in Bloomfield, Connecticut, July 23, shown on this month's cover, perhaps is typical. It was started by boys playing with matches and burned for some time before discovery by a passing motorist. Subsequent alarms brought four fire companies with eight pumpers and a rescue truck. Mutual aid alerted fourteen pieces of apparatus and 100 firemen. Actual fire attack required laying nearly one mile of 2½-in. hose, with 1½-in. lines working from a truck close to the barn. Three 2,500 gallon tank trucks worked in relay to a hydrant one mile away. The fire spread rapidly through 100 tons of baled hay and 20 tons of sawdust to destroy the main barn. The milk cooling room (left of photo) and close exposures were saved. Loss was about $70,000. (*Bloomfield Fire Department photo.*)

●

Make certain that your fire department sends an entry to the NFPA Fire Prevention Contest before November 30. Entry forms, with detailed explanation of the Contest's requirements, can be obtained by writing to the NFPA Public Relations Department. Judging of the Contest will take place in December.

"OUTSIDE" FIRE SERVICE

Some of the practical and legal aspects of providing fire protection to nonresidents, reprinted from *The Municipality*, a publication of The League of Wisconsin Municipalities. While the legal references and the suggestions in this article pertain directly to Wisconsin municipalities, fire departments in other states can make a useful comparison with their own states' statutes.

WITH the increased urbanization of many rural areas, cities and villages are continually receiving more and more calls for assistance in fighting fires outside their corporate limits. The decision whether or not to answer these calls is often a difficult one to make but many problems can be avoided and many dollars of the taxpayers' money saved if the governing body establishes a firm policy determining when and where its fire department may respond to requests for outside fire service.

Traditionally, fire fighting has been a cooperative job in which all available able-bodied men are expected to participate if needed. Although modern equipment and techniques have largely replaced the old bucket brigade, there is still a substantial number of areas which do not have or are unable to afford the services of a well-equipped local fire department. Since the need for such services is sporadic, many areas obtain satisfactory protection from jointly operated departments or from arrangements whereby one municipality furnishes trained men and fire-fighting equipment for the use of another.

When Outside Service?

A city or village has no legal obligation to furnish fire protection to persons or property outside its corporate limits. Town fire companies organized under ch. 213 of the Wisconsin statutes are required by s. 213.06 to attend fires within ¾ mile of their engine or truck houses.

Refusal to answer calls for aid in fighting fire outside corporate limits does not create good public relations, but the primary responsibility of municipal officials is to the taxpayers and citizens who purchase the fire equipment and pay for the services of the department. In cases where outside service will leave residents with inadequate fire protection and increase the cost of their fire insurance premiums accordingly, the municipal fire department is often forbidden to leave the city or village to fight fires except when the conflagration threatens to spread from the outside area and damage property within the city or village. Even when an adequate number of trained men remain available to fight local fires, it is questionable whether a department which has only one truck and pumper should be authorized to respond to outside calls unless arrangements have been made for another department to supply the men and equipment needed should fire break out in the home municipality during their absence.

Even when a city or village fire department has an ample number of men and equipment to answer calls for outside service without jeopardizing the lives or property of its citizens, it is important that agreements for outside service be formalized. Only in this way can the municipality assure its taxpayers that those persons or areas receiving the service will pay a reasonable price for the cost of the service, and that the municipality will not lose its 2% insurance dues which the state distributes to municipalities on the basis of premiums on fire insurance policies protecting property within the territory served.

Liability and Cost of Service

When a municipality furnishes outside fire service, it may make a charge for the service against the area receiving the aid (*under Wisconsin statutes*—Ed.). However, in the absence of a formal agreement, a city or village is not liable for the cost of service furnished by another department although its governing body probably has authority to appropriate funds to pay the charge in its discretion. In contrast to cities and villages, a town which does not have a fire department or a protection agreement with another municipality is liable for the cost of services of any department fighting or appearing to fight a fire within its limits [s. 60.29 (18m); *Rockwood Volunteer Fire Department* v. *Kossuth* (1952), 260 Wis. 331; *Rudolph Volunteer Fire Department* v. *Rudolph* (1952), 260 Wis. 362]. The fact that the service is requested by a resident and not a town official will not alter the town's liability.

Despite the liability of a town for the cost of the run, a court will still inquire into whether or not the responding municipality actually rendered service and whether the charges are reasonable [*Rockwood Volunteer Fire Department* v. *Kossuth, supra*]. To avoid any question of what costs should reasonably be included in an outside run, it is best to have a formal agreement with the town before the service is rendered.

There is no liability on the part of an individual outside property owner to pay for fire-fighting services regardless of the location of his premises unless he has signed an agreement with the city or village furnishing the service. Some municipalities have by ordinance set forth the terms upon which they will provide fire protection for outside residents and have authorized their departments to answer calls made by persons who have signed written agreements accepting the terms of the ordinance. When a call comes in, the chief or an assistant must check to determine if the property is covered by an agreement. When the property is located in a town which does not provide fire protection, a claim may be made against the town for the run regardless of whether or not the property owner has agreed to pay for the service.

In attending or fighting outside fires, cities and villages may incur costs over and above the ordinary expenses involved in fighting local fires. Fighting outside fires often involves hours of duty as compared with minutes in the municipality. The municipality is liable under the workmen's compensation laws for injuries to

Contracts for outside service, mutual aid or joint departments should be drafted in considerable detail and should cover all of the following matters unless clearly inapplicable to the particular arrangement:

1. Dates of commencement and termination of the agreement.
2. Contracting parties, areas or units of government.
3. Territory to be served.
4. Equipment
   a. Description of equipment to be acquired or used.
   b. Ownership and financing. If equipment is to be jointly owned, the contract should specify disposition thereof upon termination of the agreement.
   c. Who is to be responsible for and authorize storage, maintenance and minor repairs, including definition of minor repairs.
   d. Who has responsibility for and authority to make major repairs and replacements. Definition of major repairs.
   e. Use of equipment by storing municipality in fighting fires within its territory or elsewhere.
   f. Insurance of equipment and drivers.
5. Personnel.
   a. Number of men to be made available.
   b. Pension liability.
   c. Insurance: workmen's compensation, health, accident, medical and hospital.
6. Calls.
   a. Person authorized to answer (generally the chief).
   b. Priority of calls.
   c. Waiver of liability in case of nonattendance.
   d. Right of men or equipment to leave fire to answer fire calls in home community.
7. Area cooperation on routes, roads, reserve water supply and prevention measures.
8. Fire inspection and reports and regulatory ordinances. (Section 101.29 requires local fire chiefs or other persons certified as fire inspectors to inspect all buildings, premises and public thoroughfares, except private dwellings in the territory served by their department at least once every 6 months.)
9. Cost and basis for payment of service, including billing and due dates.
10. Division and distribution of 2% aid.
11. Method of extending, terminating or modifying agreement.

firemen even when answering an outside call [ss. 102.04 (1); 102.07 (1); *Burlington* v. *Industrial Commission* (1928), 195 Wis. 536]. An additional premium of $3.38 is charged by workmen's compensation insurance carriers for each outside run made by a volunteer fire department. Wear and tear on equipment and cost of gasoline may be excessive on long country runs. The municipality is liable for accidental damage caused by the negligence of its firemen operating the fire truck on highways or streets outside as well as inside its limits [ss. 201.59 (2); 345.05]. In addition, outside areas should bear a reasonable share of the cost of standby, ready-to-serve expenses, including equipment depreciation.

Unless the runs are made on a contract or mutual agreement basis and a copy of the agreement approved by the industrial commission and filed with the commissioner of insurance, neither the municipality furnishing service nor the municipality without a fire department receiving the service is entitled to the 2% insurance premium payments covering the outside territory. Furthermore, if the industrial commission finds that the department furnishing the service cannot afford to provide such protection, the protecting municipality will lose its own regular share of the fire insurance premiums [s. 201.59].

Essential Provisions

According to records of the Wisconsin insurance department, as of December 31, 1958, there were 198 cities, villages and towns furnishing fire protection services to one or more municipalities or areas outside their own boundaries and 3 groups of municipalities operating their fire departments jointly. These figures represent only those municipalities who have filed agreements with the commissioner of insurance and do not include those cities or villages which occasionally make outside runs. The agreements range from fully joint operation and financing to arrangements whereby one municipality furnishes complete fire protection to another.

Wisconsin towns are granted specific and broad powers to enter into contracts and appropriate funds for obtaining fire protection from neighboring towns, cities or villages or to establish joint fire departments. Cities and villages have authority to provide or obtain outside fire service under their broad powers to act for the commercial benefit, safety and welfare of their citizens. They also have authority to enter into mutual aid agreements or contracts for the operation of joint fire departments with any city, village, town, county or other local unit of government.

Charges made for outside fire service vary greatly, depending upon the amount of protection furnished and extent of service. When the agreement provides for joint ownership of equipment or purchase of separate equipment by the municipality requesting service, the charge is usually lower than when both men and equipment must be furnished entirely by the municipality rendering the aid.

Here are four general methods of computing charges: (1) a flat yearly readiness-to-serve charge; (2) a fee for each run based on a flat fee, hourly rate or mileage rate; (3) an annual charge based on the tax burden of fire protection service which property of equivalent value in the protecting municipality would pay; and (4) any combination of these methods.

Distribution of the 2% fire insurance dues for the territory served will depend upon the service arrangements. Generally the municipality furnishing the service is entitled to the dues from all territory served. However, if the municipality served furnishes equipment and assumes responsibility for repair, maintenance and replacement thereof, it is entitled to the 2% of premiums paid upon property in its jurisdiction. Under operation of a joint department, the aid is divided.

HOW TO HANDLE

YOUR BIGGEST FIRE

THE majority of fires which the average small town or rural fire department encounters are within the capability of three or four pieces of apparatus properly manned. These fires generally include grass, brush, woods, motor vehicles, dwellings, garages, and small outbuildings. However, in almost every community or fire district there are certain properties which, if ignited, will make a large and devastating fire.

Such a fire may cause more loss than the value of all the property saved by the fire department over a considerable period of years. In the fire service such places having a potential for large fire are called "target hazards." The alert fire department knows that if a fire starts in one of these hazardous places the job of extinguishment will be tough.

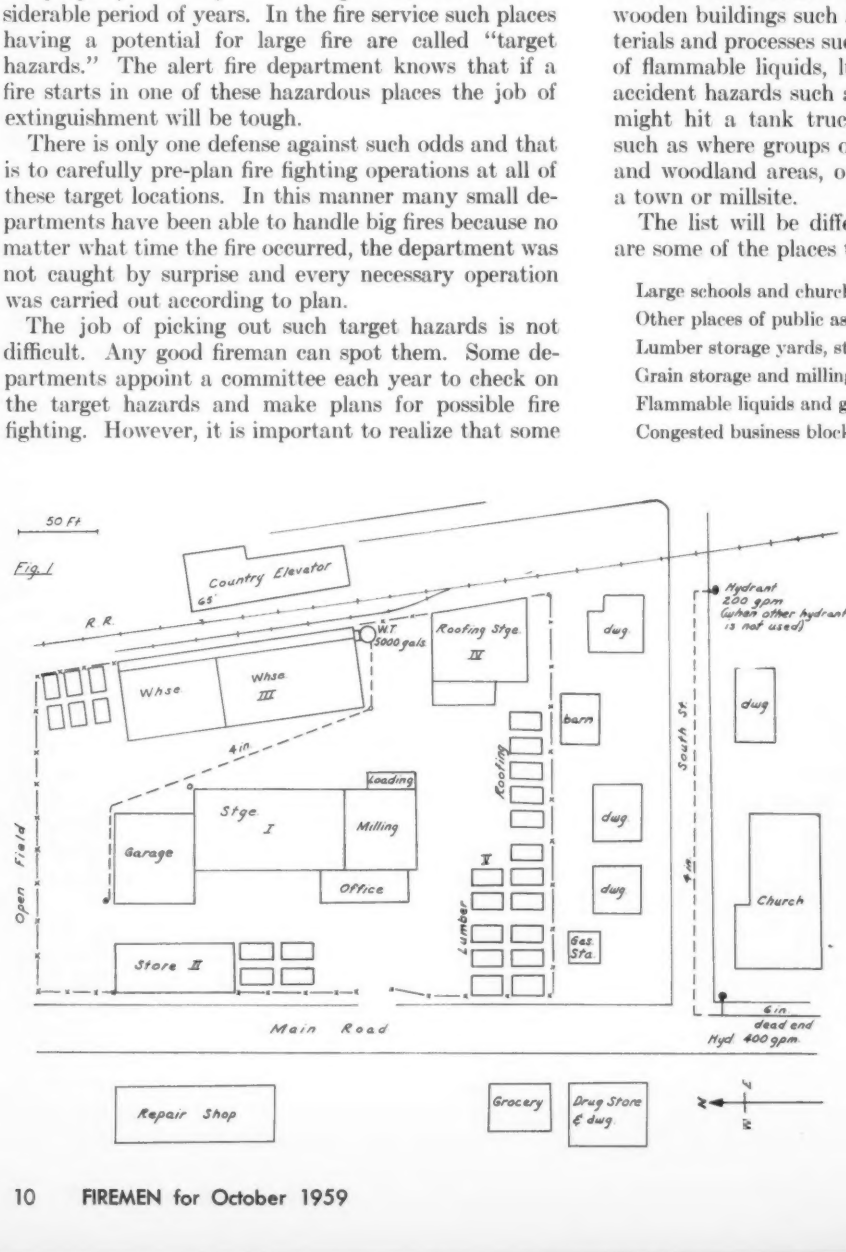
There is only one defense against such odds and that is to carefully pre-plan fire fighting operations at all of these target locations. In this manner many small departments have been able to handle big fires because no matter what time the fire occurred, the department was not caught by surprise and every necessary operation was carried out according to plan.

The job of picking out such target hazards is not difficult. Any good fireman can spot them. Some departments appoint a committee each year to check on the target hazards and make plans for possible fire fighting. However, it is important to realize that some of these fires may be so big and hot that it may be necessary to select a place for a "stand" or second line of defense in case the initial fire fighting plan to move in and extinguish the fire is ineffective.

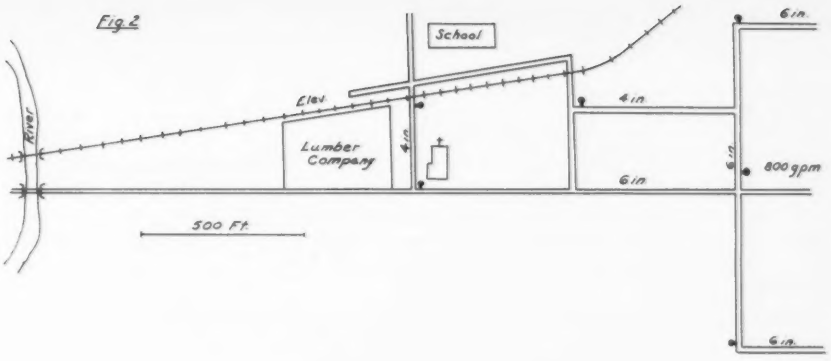
As we look about the fire district we will readily spot places where a real big fire may occur and so we list these. Some things we look for are: 1. Large area buildings or groups of buildings subject to a single fire; 2. Relatively large amounts of wooden or other combustible construction (we are not thinking of small wooden buildings such as dwellings); 3. Hazardous materials and processes such as grain dust, large quantities of flammable liquids, lumber storage, etc.; 4. Possible accident hazards such as grade crossings where a train might hit a tank truck; 5. Serious exposure hazards such as where groups of buildings are located in brush and woodland areas, or where heavy brush endangers a town or millsite.

The list will be different in each district but these are some of the places to consider:

Large schools and churches of combustible construction
Other places of public assembly or institutions
Lumber storage yards, storage buildings, woodworking plants
Grain storage and milling
Flammable liquids and gases storage and distribution
Congested business blocks of combustible construction



Here is a target hazard that could spell trouble for a fire department. There is a concentration of combustible occupancies and serious exposure problems. Water supply has serious limitations. The fire department's job is to map out such areas and plan distribution of apparatus and use of water supply from every possible source, to confine any fire that may start in this area. Note, for example, that a fire in the lumber yard could threaten the dwellings and gas station on one side, the roofing storage warehouse on another, and the warehouses and storage buildings on the north. The hydrant supply would not be of much use for a major fire which probably would require mutual aid support.



Here is another type of problem for a small department. A church, school and lumber yard are at an important junction. Hydrant supply probably would need supplementing by relay operations from river at left. Apparatus would be spotted accordingly. A fire in the school could raise a serious problem if railroad trains happened to be passing at the same time.

Railroad properties
Truck terminals
Very large dairy barns
Large poultry houses and plants
Large resort properties
Airports
Large industries located in rural areas

Now, in planning our fire fighting operations our first consideration is always life safety. Are persons likely to be trapped or injured? How are we going to get them out? Will any special first aid or ambulance facilities be needed?

After taking care of life safety we go on to the fire-fighting problem. It is always a good plan to consult the management of the property in question. Tell them you are making special plans to protect their property in the event of fire and ask the owner, manager, or custodian to point out any operations which might have a fire or explosion potential so you will know about it and where it is located.

As in the case of all pre-fire planning, it is important to make or obtain a sketch or map of the property. Often such maps showing all features of interest in relation to fire protection have already been prepared by the Sanborn Map Company and are available from a nearby insurance company or agency office. If not, it is relatively easy to make a satisfactory sketch. Such a plan is usually made on a scale of 50 feet = 1 inch or 100 feet = 1 inch. (See NFPA Inspection Manual.) The plan should show the location of all buildings in the fire area and the access ways into the property. If there are other buildings nearby which may be exposed these should be shown. (Fig 1.) Sometimes it is helpful to add a little map showing the general location of the property in relation to the community. (Fig. 2.) Remember you may want to give copies of your sketch to other fire companies that are going to be asked to help fight this possible big fire and they will use it to understand what you want them to do.

In fighting any fire we want to try to confine it to the area involved on arrival of the apparatus and put it out if at all possible. This means that if the fire is not completely beyond control we will make an effort to move in and put out the fire just as we would any other building fire. However, with large structures or fire areas it is very important to start to back up the initial attack with more streams just as quickly as possible because the fire may be building up heat very rapidly and may make the initial attack ineffective.

The main problem in almost any big fire is water supply because we want large streams both to cool the large fire and to provide reach because intense heat often drives fire fighters back beyond the reach of ordinary hose streams. Thus, our plan is going to show what water supplies we have available for: 1. Initial attack. 2. Back up of initial attack. 3. Supplementary supplies for major fire.

Our water for initial attack may be on the apparatus responding to the first alarm. There may also be some private water supplies on the property but often these are cut off by the fire. Perhaps there is a hydrant or suction location near enough to provide water needed for fast attack.

Next we look for more water within easy reach, say within 1,000 feet. This is water that we can get to the fire with one standard hose load before our initial supply runs out. It may require drafting with a pump.

Our third or supplementary supply means any water we can bring to bear on the fire by tanker, pumper relay or any other means in order to augment our holding operation with all possible water supply. In general, this work will largely have to be assigned to outside companies.

Perhaps the biggest mistake that can be made in fighting a big fire is not to call outside help soon enough. Remember that outside fire companies have further to come and will generally have to make longer layouts. It may easily be fifteen or twenty minutes at best before outside help can get the much needed streams into action, therefore, call them at once according to plan as soon as the man in charge of the fire finds that he has a working fire under way.

When help is called give them specific instructions where you want them to report and, if possible, the type of operation you intend to carry out. For example, if you need tankers to shuttle water between a certain supply point and the fire, say so. If you want pumpers or any other equipment, make your request specific and tell them to whom to report. Be sure to have a properly qualified person meet the incoming apparatus and see that the local plan of operation is carried out. Remember that the ranking local officer is in command. He may want to consult with officers of assisting departments but he must take the responsibility for the action.

Some of the most serious mistakes made at large fires are:

1. Attempting to operate too many pumpers on a small capacity water system. *Do Not Allow* more pumps to be hooked up to hydrants, or more lines run than the water system can supply, or none of the streams will be any good for effective fire fighting.

2. Delay in getting pumps in service can be fatal. Big fires require pumper pressure and direct streams from public or private hydrants not supplied by pumps will ordinarily be worthless and waste water.

3. Don't be afraid to operate the pump at sufficient pressure to move a large amount of water through the hose and give a good nozzle pressure. For hand lines of moderate length (300 to 500 ft.) give about 150 pounds discharge pressure. For longer lines and lines supplying heavy stream nozzles (monitors, aerial ladder pipes, etc.) provide at least 200 pounds pump pressure if possible. If one pump cannot provide enough pressure for good effective streams, relay to another pump at the fire.

4. Another very frequent mistake is to use small nozzle tips on the main fire. A standard hose stream is 250 gpm from a 1⅛-in. tip. Not less than a 1-in. tip is needed for a good 2½-in. line. The ¾-in. and other small tips are inadequate for big fires. If small streams are needed to cover certain exposures, 1½-in. lines can be used. A single 2½-in. line will supply several good 1½-in. lines.

In fighting any big fire, one of our first considerations is to see where we can cut the fire off. A solid wall or masonry building may make a good firebreak. Remember, however, that heat will go quickly through plain glass windows. Get lines in place to extinguish any fire that may get past your defense line. Be careful not to knock out heated glass panes with hose streams if the glass is holding back the fire. Be aggressive in the operation of hose streams. Keep the lines mobile. Black out areas of fire that are threatening exposed property and then direct the stream at another point but be alert to knock down any rekindling of flame.

As much water as possible should be used to cool the fire to reduce the heat which is threatening exposures. From time to time streams can quickly cool exposed properties which are getting ready to ignite. After wetting the exposure, the evaporation will be visible and will indicate another dash of water is needed. Take turns at the pipe and remember that only men wearing proper fire clothes can withstand the terrific heat of a big fire. Officers should always be concerned with the safety of their men. One important point is to always have a clear path of retreat for both men and apparatus.

Many fires are lost because of failure or slowness in ventilating over a fire. For example, a fire may be burning in the basement or first floor of a store building. Failure to make an adequate opening to let the heat out at the roof level results in such an intense build-up of fire and heat that the building on fire is not only destroyed but adjoining buildings are also destroyed.

When there are exposures separated by a firewall or a party wall, charged lines should always be taken into the exposures or through openings that may be there. Streams thrown through windows into exposed buildings are almost worthless. They only cause needless damage and will not control most exposure fires. Open up the exposed buildings as much as possible and take lines inside. If sufficient 2½-in. lines are not available, 1½-in. lines will do. Use the bulk of the available water on the main fire. Water properly used will be very effective even on major fires, but always remember that you want the water to reach the fire area if possible or at least cool down property that is seriously exposed.

At big fires there is often a flying brand problem which may be very serious if there are wooden buildings or dried brush and grass downwind. Fires have been known to start from brands entering open windows. Organize patrols to combat such exposure fires. Often property owners will use their garden hose. Sometimes this is effective but usually it wastes water which may be critically needed elsewhere. Often one or more of the outside fire companies will be assigned to combat the flying brand hazard. Heavy streams, preferably with big fog nozzles, operated on the downwind side of the fire will help knock down the embers. Many conflagrations have occurred when the brands from the original fire started more fires than the water supply and fire department could handle even with outside help. This is another reason for calling plenty of help promptly because if the fires started by brands are attacked when they are small, they can be handled with 1½-in. or booster hose from booster tanks.

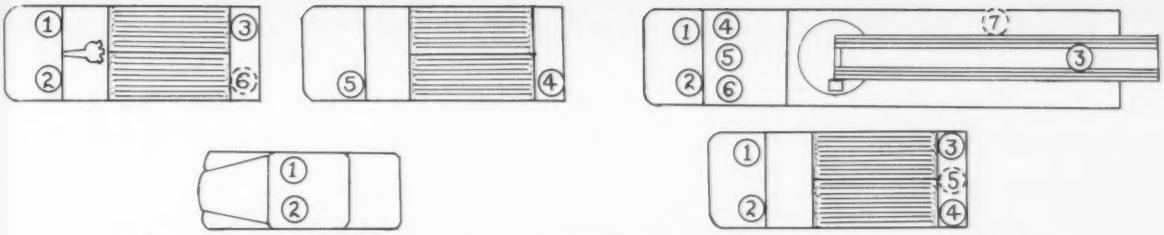
One other suggestion of importance is that every fire department needs several portable heavy stream nozzles for fighting big fires. When funds are not available or limited water supplies do not warrant purchase of a monitor designed to siamese several large hose lines into one stream, at least the department should have nozzle holders and nozzles with big tips which will take the full flow of a 2½-in. hose. (1⅛-in. and 1¼-in. tips provide flows of 250 to 400 gallons per minute at effective pressures. Large flows cause a nozzle reaction which makes it necessary to employ some device to secure the nozzle.

Important Reprints

TWO recent reprints from NFPA publications are of particular interest and use to fire fighters. The August issue of *Fire News* had a special report of the fire that occurred in the Pentagon in Washington, D. C. This fire involved electronic data processing machinery and the report cited the requirements for automatic sprinkler protection for rooms where such computers are housed. Copies of this reprint are available for 25 cents each.

The informal summary of the Los Angeles school fire tests, contained in the July *Quarterly*, has been reprinted. The tests were summarized at the recent NFPA Annual Meeting in Atlantic City by Deputy Chief Raymond M. Hill of the Los Angeles Fire Department. A complete, detailed report will be available later in October. (See page 7.) Price of this reprint is 25 cents.

Another leaflet just published is the address by Radcliffe Morrill on the responsibility of school superintendents for fire safety. This also was featured at the Annual Meeting. The leaflet has some practical suggestions for local school authorities and is priced at 25 cents per copy. Discounts are given for quantity purchases of these three publications.



Necessary manpower for apparatus is shown in solid circles. Desirable additional manning is shown in broken circles.

MANNING A RESPONSE GROUP FOR NORMAL URBAN FIRE HAZARDS

by Warren Y. Kimball, Manager, NFPA Fire Service Department, and Editor, FIREMEN Magazine

This is a sequel to the article, "Organization to Man a Basic Fire Department Response Group," which appeared in last month's issue.

AS HAS been previously pointed out, a group of two engine companies and a ladder company, each manned by four men or a total of twelve fire fighters, is the minimum response for light-hazard residential areas consisting of small dwellings and other small structures. It would not be adequate for many urban areas such as more densely built residential districts including multiple family dwelling units or for congested mercantile or manufacturing districts.

In such areas of greater fire hazard to life and property the minimum response groups should be strengthened. For example, at least one two-piece engine company might be provided for each group, and aerial ladder companies would have at least six men including officer on duty.

The two-piece engine company should never respond with less than five men.

An aide should be provided for the chief not only to drive but also to serve as communications man at fires.

For fires in large area and multi-story buildings at least two such response groups may be required on first alarms. The manpower figures shown in the solid circles are the desirable minimums needed to operate effectively the companies shown. An additional man on duty with each company would be desirable (broken circles), particularly in high hazard areas where considerable ladder work is needed and where lines must be advanced above the second floor.

The two-piece engine company preferably should be equipped with two pumpers, one of which normally serves as a tender or "hose wagon" but which during major emergencies can be manned by off-duty personnel to provide a separate company. At least the piece serving as a wagon should be equipped with a portable turret or heavy stream device.

The place where the No. 4 man rides may vary, but, in general, the officer and at least two men ride the first piece which usually lays the hose and two men ride on the second piece which is usually stationed at the hydrant. Some departments like to have a man ride the rear step of each piece to make certain that no equipment is lost en route. Normally, on a two-piece engine company the pump operator drives the pumping engine and a man designated as "wagon driver" operates the piece designated as the "wagon." When the "wagon" driver is needed as a hoseman after placing his pump in service, the pump operator on the second piece will attend both pumps.

The two-piece engine company manned as shown is capable of quickly utilizing the full capacity of the pumper located at the hydrant. The same two pumpers operated as separate companies with two- or three-man crews are only capable of each providing a small stream utilizing but a fraction of the available pumping capacity.

All pumpers should have divided hose beds loaded so that it is possible to lay at least two big lines simultaneously, as this is the only way a significant part of the company's available pumping capacity may be quickly utilized with standard manpower normally responding with the apparatus.

The ladder company crew of six men (including officer) is the minimum that can properly perform all truck company duties that must be carried out simultaneously including: search and rescue, forcible entry, ventilation, operation of aerial, operation of ladder pipe, placement of ladders, operation of lighting equipment, use of tools carried on the ladder truck, and salvage. Where the ladder company is expected also to operate small hose, additional manpower may be needed.

One advantage of the two-pumper company is that one piece can be applying water from its booster tank through pre-connected lines while the second pump is connecting to the hydrant. Another advantage is that the distribution of water is controlled by the pump at the fire which provides the correct pressure and volume for each stream.

Highlights in the History of

SELF-CONTAINED BREATHING APPARATUS

By George L. Morse, Product Line Manager, Oxygen Equipment, Mine Safety Appliances Company.

Part I of two parts

SELF-CONTAINED breathing apparatus may seem to be a relatively new development even though many readers may recall the old oxygen helmets which were imported from Germany and which were used to a limited extent over a period of years in the United States. Reasonably efficient breathing apparatus was available long before wide use of gas masks which were an outgrowth of World War I. Gas masks were known at least as early as 1878, but since the first American-designed and built self-contained breathing devices were generally concurrent with gas masks in World War I, the very early origin of self-contained breathing apparatus may come as a surprise.

The self-contained breathing apparatus in use today are divided into three broad categories:

1. Oxygen cylinder rebreathing apparatus
2. Self-generating oxygen rebreathing apparatus
3. Demand type breathing apparatus

The earliest forms of breathing apparatus were closest to the present-day demand type as they were without rebreathing, or regeneration as it is sometimes called.

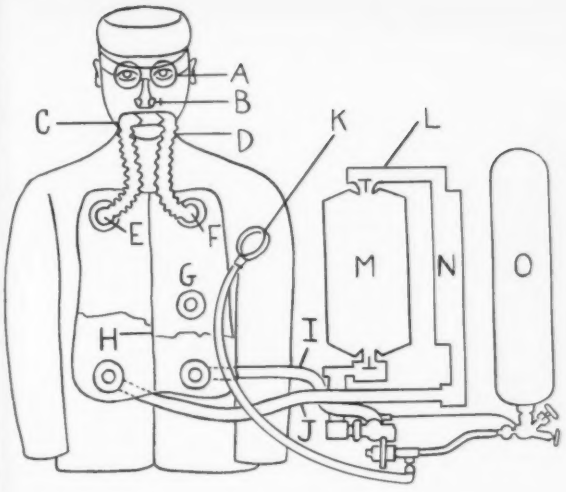
As historical accounts are far from complete, the date of the earliest self-contained breathing apparatus is somewhat conjectural. However, among the earliest was one devised by Alexander Von Humboldt in 1795. This apparatus consisted of an oiled taffeta bag which served as a storage container for breathing air, a bellows for filling the bag with atmospheric air and a partial facepiece. The initial charging pressure in the bag was governed by the strength of the container (the taffeta bag) and that which an "ordinary" bellows could produce. What this bellows could develop in pressure and consequent breathing volume is unknown. However, from pictures of the device it is evident that the small bag could provide at best only enough air for several minutes since the air was drawn from the bag during inhalation and exhaled to the atmosphere.

Fire fighters here shown wearing early type breathing apparatus developed by W. E. Gibbs while employed by the Bureau of Mines.

To increase the usefulness of this breathing apparatus, which was developed for the Hartz mines, a traveling air container was proposed, details of which are contained in sketches prepared by Heron de Villefosse, a French engineer. This provided a greater air supply, although still apparently of short duration, but also produced the encumbrance of a cart on which the container was rolled. Certainly the value of the apparatus was questionable, but it points out the desire for complete respiratory protection, the necessity of which was recognized 163 years ago.

In Austrian military journals for 1862 appeared a description by W. Scherzer of a self-contained breathing device in use by the Austrian Imperial Sappers and Mine Corps in 1830. Scherzer gave the following description of this device.

> The rescue apparatus consists of an air container and a face mask. The mask, as first designed, consists of a linen-lined hood of kid covering the whole head of the wearer and surrounding the neck with two flaps, secured by two broad bands or tapes about as tightly as an ordinary neckcloth. Glass eyepieces are inserted airtight opposite the eyes while opposite the mouth of the wearer there is a bag or pouch (110 cubic inches capacity when inflated) holding a sufficient quantity of air coming from the container.
>
> On the front of the pouch there is, further, a stitched-on brass flap valve enabling breathing from the open air with the hood on, to save the compressed air, before entering the contaminated space, when this valve must be closed. On the back of this pouch there is, finally, a short air pipe which can be placed in communication with the air container. This pipe contains a whistle protected against obstruction by a cafe, which, when being acted upon by the air flowing from the container, affords an indication of its due passage; and by the gradual lowering of the pitch owing to the decreasing expansion of the air, indicates when to open the air tap wider and thus maintain the air supply. This whistle is



The Draeger apparatus was first manufactured in 1903. At right is another view of the same apparatus. A — goggles; B — nose clip; C — exhalation valve; D — inhalation valve; E — inhalation tube; F — exhalation tube; G — automatic release valve; H — connection between inhalation and exhalation sides of breathing bag; I — tube to regenerator; J — tube from cooler; K — finimeter; L — tube to cooler; M — regenerator; N — cooler; O — oxygen bottle.

fitted eccentrically in a pipe open at the top and provided underneath with an eccentric cut-out, in a position to be determined by experiment, since with excessive expansion the current of air will be so powerful as to cause the whistle tone to become inaudible and thus mislead the wearer into unnecessarily opening the air cock.

The air container is a sheet-iron flask, riveted airtight, in the form of a cylinder with hemispherical ends, 13 in. long and 6 in. in diameter having a capacity of over one-sixth of a cubic foot. Each flask is tested to a pressure of 60 atmospheres (882 lbs.) to insure that it can support the designed working pressure of 20 atmospheres (294 lbs.) without bursting.

On the one hemispherical end there is a brass nut by which it can be screwed for filling with air to a suitable compression pump; inside this nut is an air-admission valve opening inwards and preventing escape of the compressed air for which purpose the nut is further provided with a screw plug. The nut on the other hemispherical end has two pipes soldered on opposite each other and so curved that when the wearer carries the container strapped to his back, the two pipes pass over his shoulders, uniting in front at the level of the neck, in a brass casing. One of these pipes conducts the air from the container to the face mask, for which purpose the pouch on the latter is connected to the brass casing by a screwed-on air pipe while the other is solid-cast and serves as a counterweight to the first.

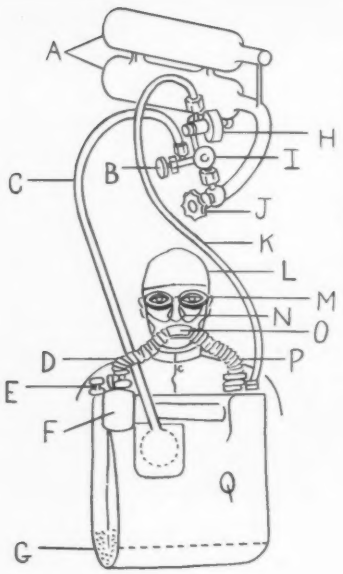
According to the tests made, a man equipped with this apparatus, if familiar with the adjustment of the air cock, could remain up to 35 minutes in a room filled with powder fumes and smoke, without any difficulty in breathing.

It was a self-contained compressed air-breathing device different in many respects from the present-day demand air apparatus. The air supply now is greater as our modern cylinders permit a much higher charging pressure and the use of a demand regulator provides a more efficient use of the available breathing air. Some 45 years ago the hazards of full covering for the head as in the Austrian device were recognized and such a mask is no longer used, but this recognition did not come about for many years and much trouble resulted over a long period.

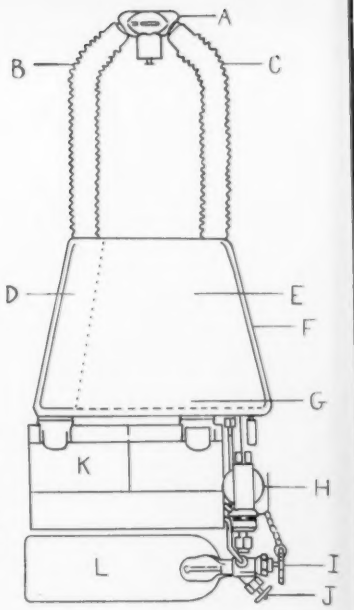
About 1850, a French mining engineer, A. Boisse, devised a copper compression cylinder which could be charged to a pressure of 15–16 atmospheres (220–235 psi). About 1860, the French mining engineer, P. C. M. Combes, designed a cylindrical sheet-iron air vessel capable of taking an initial charging pressure of 30 atmospheres (440 psi). The dimensions were 26 cm. diameter by 73 cm. long, and the supply of air was reputed to be sufficient for one hour's respiration. In 1861 an Austrian mechanic, C. B. Kraft, constructed a compressed air-breathing device with a metal air vessel carrying sufficient air for 15 minutes respiration when charged to 15 atmospheres (220 psi).

As you can note from these descriptions and the reputed service life, the method of calculating the service life of a breathing device is of fundamental importance. The old devices were not evaluated in the same manner as present-day apparatus where reproducible type work tests are used as specified in Schedule 13 of the Bureau of Mines, U. S. Department of the Interior.

There is considerable controversy as to who is responsible for the design of the first satisfactory "closed-circuit" or rebreathing type apparatus. Dr. Theodore Schwann, a Belgian physiologist, is widely regarded as having designed the first closed-circuit apparatus using compressed oxygen and a CO_2 scrubbing chemical, but Davis contends that this is not accurate. It is recorded that Stephen Hales, about 1750, contrived a crude device which used a container from which the wearer breathed. The wearer's exhalation passed through potash impregnated flannel discs which removed the exhaled CO_2 to some degree. However, since there was no replenishing oxygen for the air vessel and the CO_2 removal was not efficient, about 3 to a maximum of 5 minutes was obtained. A Dr. Jan Ingenhousz, who was born in Holland but lived in Austria, presented a paper to the Royal Society in London on March 25, 1779, describing a device which used heated saltpeter for an oxygen supply and a jar of limewater for removing the exhaled CO_2.



(Left) This is the Fleuss-Proto apparatus designed by H. A. Fleuss in England. The wearer breathes through the mouth only. The rubber mouthpiece has a rubber flange which fits between the teeth and lips and is held firmly by a skull cap. Lettered features are: A — oxygen valves; B — pressure gage valve; C — pressure gage tube; D — exhaling valve; E — relief valve; F — saliva trap; G — end section showing caustic soda spaces; H — reducing valve; I — by-pass; J — main valve; K — oxygen supply tube; L — skull cap; M — smoke goggles; N — nose clip; O — mouthpiece; P — inhaling valve; Q — breathing bag with inhaling and exhaling compartments.



(Right) Back view of breathing apparatus designed by W. E. Gibbs. A — mouthpiece; B — exhalation tube; C — inhalation tube; D — exhalation side of cooler; E — inhalation side of cooler; F — cooler; G — breathing bag; H — regenerator; I — reducing valve; J — closing valve; K — by-pass valve; L — oxygen bottle.

To return to Dr. Schwann who had entered a prize competition sponsored by the Royal Academy of Sciences in Brussels in 1852 for a mine rescue apparatus prompted by a mine disaster, it appears that he did not create a cylinder type rebreathing apparatus, but one using barium peroxide. He had wanted to use potassium or sodium peroxide but felt that they were too costly, so he settled for the less efficient barium peroxide. This device was constructed in 1853, but apparently could not be used, and in 1878 he exhibited at the Brussels Exhibition a device using an oxygen container and a CO_2 scrubbing chemical. About the same time Siebe, Gorman & Co., Ltd. was working on an apparatus devised by H. A. Fleuss and some were made in 1879 and used at the Killingworth mine disaster in 1880. In the same general period Dr. Draeger, who founded the German Draegerwerke, had made a comparable apparatus. These devices were substantially the same as those used today for mine rescue purposes except that they used the principle of constant flow or fixed-dosage rather than lung-governed valves which provided oxygen flow as required during inhalation. W. E. Gibbs, while employed at the Bureau of Mines, created the first "lung-governed" apparatus in 1918 and some were used by the American Army in Europe in the latter stages of World War I. The first Bureau of Mines approval under Schedule 13 was granted to this apparatus in 1920. Despite the fact that prior to that time all apparatus used in the United States were imported, American-made apparatus soon replaced the imported Draeger or Fleuss-Proto, one of the principal reasons being the use of the lung-governed principle.

The European designers contended that the lung-governed principle was not sound but, nevertheless, after the passage of many years they are using this principle. In the constant flow apparatus it was only sheer chance that the oxygen flowed at the proper rate as it was excessive for a man at rest or doing light work but was inadequate for the man doing heavy work. Conversely with the lung-governed principle, the flow rate automatically met the exact rate demanded by the wearer.

It is an interesting sidelight that apparently W. E. Gibbs also devised the first known demand regulator for aircraft oxygen use in 1922, although it never was used because of excessive weight and inadequate performance. Actually, it was some 14 years later that the first practical demand regulators were designed and manufactured.

I find it of considerable interest also to reflect that the first self-generating type using an oxygen-producing chemical was contrived 100 years ago by Schwann even though it was over 80 years before a practical device became a reality.

Robert H. Davis, of Siebe, Gorman & Co., Ltd., British manufacturer of self-contained breathing apparatus, has written an excellent book, *Breathing in Irrespirable Atmospheres*, which contains interesting accounts of early forms of self-contained breathing apparatus. Among these is a device designed by J. White in 1859 which was in the form of a suit with a flexible bag which supplied air through a pipe from the bag and permitted exhalation through an outlet pipe.

A Frenchman named Galibert introduced a device in 1864 which consisted of an air-tight goatskin bag filled with atmospheric air at a slight pressure by means of a bellows and carried on the back. A mouthpiece was fitted with two tubes — one forming an exit pipe and the other connected to the bag. The wearer's tongue took the place of valves stopping the exit pipe when inhaling and the inlet pipe when exhaling. This was a method requiring the complete attention of the wearer to avoid incorrect flow and certainly today's automatic check valves are far more satisfactory. The bag, which was quite large, had a free air capacity of about six cubic feet so that if it were filled to somewhat more than one atmosphere it could be expected to provide air for no more than 8 to 9 minutes.

(*Continued next month*)

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Lining of defective suction hose appeared to be all right when examined visually from this end of the hose.

Suction Hose Failure

DEPUTY Chief Louis E. Vogt, member of the NFPA Committee on Fire Department and Chief of Apparatus of the Rochester, New York, Fire Bureau, was recently testing a pump at draft and was troubled by the pump's failure to hold prime. A vacuum test showed excellent suction ability and yet as soon as the pump developed sufficient vacuum to draft water from the pump test basin, no water could be obtained. This puzzled the men conducting the test until a slap was heard while the pump was being primed. This led

After needle was inserted into hose during drafting, rubber lining bubbled like this to block water flow.

Chief Vogt to surmise that the suction hose lining was being sucked inward to block the hose when a vacuum was developed and was returning to normal condition when the hose was not in use. Acting upon the assumption he carefully inserted a hypodermic needle through the outer wall of the suction hose while attempting to draft. This allowed air to fill the space between the lining and the hose wall and when the needle was withdrawn, the rubber closed the tiny hole and the air bubble remained, keeping the lining inflated and blocking the hose as it was when drafting.

Investigation showed that this hose was constructed during World War II when use of materials was restricted and the lining was not properly bonded to the hose. Tests of other suction hose in the department showed several other lengths similarly defective.

This leads to the observation that suction hose should be tested periodically as is discharge hose. However, suction hose should have a vacuum test and be tested when drafting water at the rated capacity of the pump. A vacuum test with no water flowing might not show a defective lining. A test at a small lift with a small flow might not develop sufficient vacuum to pull loose a weak lining and the defect might not be disclosed until the pump is called upon to draft at capacity. Accordingly, it is suggested that the annual pumper suction tests at draft be conducted with the hose on the apparatus which should serve as a test of the hose as well as the pump.

Film Demand High!

THE August, 1959, issue of FIREMEN magazine reported the activities of the NFPA Film Library and listed 49 films that were available. The film library is directed by the NFPA Committee on Visual Education and is operated as a service to NFPA by the Western Actuarial Bureau, P. O. Box 1080, Chicago 90, Illinois.

Captain Harry Wolff, who is responsible for the library, reports that there has been a tremendous demand for the films, particularly for the month of October. As a result of the numerous requests, most of the films have been scheduled for some months ahead; some of the more popular films are already reserved for January of 1960.

On the average, though, fire departments who want to order films from the NFPA Committee on Visual Education should allow for a delay of one month to six weeks before the film is available. Of course, the advantage in ordering these films is that they have already been previewed by the NFPA Committee on Visual Education and have been approved as good motion pictures for showing to the fire department audience or to a general audience. In addition, the films are available on loan for the minor cost of return postage and insurance.

Readers are also reminded that a listing of more than 200 films on fire fighting, fire protection and fire prevention is available from the NFPA Publications Department. The films cover a wide range of subjects including home fire safety, industrial fire protection, aviation, forest and brush fire control, and civil defense.

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Superior Workmanship

Fire Chiefs from Coast to Coast say:
"FOR THE FINEST BRASS GOODS,
Specify McINTIRE."

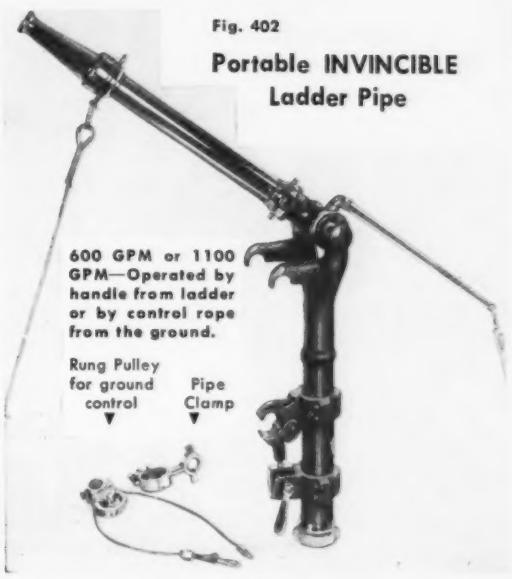
600 GPM or 1100 GPM—Operated by handle from ladder or by control rope from the ground.
Rung Pulley for ground control
Pipe Clamp

Fig. 402
Portable INVINCIBLE Ladder Pipe

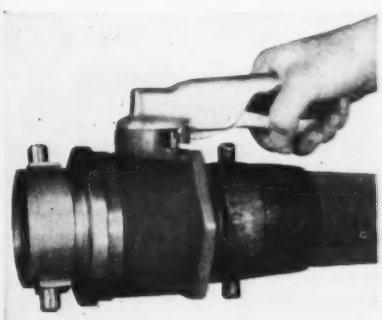

Fig. 163 — NEW
Hydrant Gate

A new 2½" Hydrant Gate with full waterway and quarter turn ball valve, features elevated ratchet lock handle to eliminate hand contact.

"ORIGINATORS and SOLE MANUFACTURERS"
of THE INVINCIBLE NOZZLE

BE SURE YOU SPECIFY "McINTIRE"!

F. N. McINTIRE BRASS WORKS
ESTABLISHED 1837
377 Putnam Ave., Cambridge 39, Mass.

Get smoke out, get air in

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CONTROLLED VENTILATION UNITS

NOT JUST A FAN ... but a powerful vacuum-action air screw ... Super Vac is amazingly simple in operation, made possible by the efficient design of the **powerful propeller** that is the heart of the unit. This patented propeller produces 100% pulling or blowing power over its entire surface.

Proved method of saving lives while also reducing smoke damage

Fire departments **nation-wide** attest to the speed with which Super Vac provides **controlled ventilation** ... so necessary in modern fire fighting. This multi-purpose unit primarily (1) gets rid of smoke and fumes through its powerful vacuum action ... or, (2) furnishes a tremendous blast of fresh air into the smoke-congested area, reducing the dangers of combustion and asphyxiation. Although one unit is often sufficient, **complete controlled ventilation** can be more speedily accomplished by using two or more units ... one or more units **pulling out the smoke and fumes** while the remaining units **blow in a steady supply of fresh air.**

★ **Highly portable ... operates in any position**
★ **Design permits vertical stacking**
★ **Made in 16" and 24" sizes**
★ **AC or DC, regular or explosion-proof motors**
★ **Choice of red or white baked enamel finish**
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For complete details and specifications on

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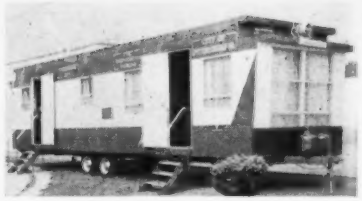

Fire Prevention Trailer

CHIEF J. N. Farmer of the Petersburg, Virginia, Fire Department has had a great deal of success with this fire prevention trailer, which he designed and built with the help of his staff of the Fire Prevention Bureau. The trailer is 36-ft. long and is moved by a tractor unit. Doors are equipped with panic hardware and exit lights. There are two telephones so that children may be trained how to dial the fire department. There is also a Gamewell fire alarm system with a box tapper and gong; a fixed temperature fire detection system; a wet and dry pipe sprinkler system; and a number of other useful items for demonstrating fire safety. One of these is a house equipped with sliding doors, stairwells, chimney, attic and stove. This miniature house, designed by Captain Alvin Gibbs of the Fire Prevention Bureau, shows numerous types of fire hazards such as faulty electric wiring, flammable bed clothing, the hazards of spontaneous ignition and poor housekeeping.

In the rear of the trailer is a special board for demonstrating the overloading of electric wiring. In front of this board is an animated "Sparky." An instructor can speak through the dog by means of an amplifier and can move the dog's head and feet. This has been very attractive for children who have viewed the trailer.

There is also a 16-mm. sound projector together with fire prevention films and a screen, a record player and turntable, two loudspeakers, and a beacon light on top of the vehicle. The trailer has an AC and DC generator for supplying electric current, a number of fire extinguishers, combustible gas indicators and equipment for illustrating dust explosions.

Chief Farmer and his department have used the trailer extensively in programs for school children, industry and the general public.

Massachusetts Conference

ON SEPTEMBER 17, Massachusetts joined the ranks of more than 30 other states that have held a Governor's Conference on Fire Prevention. Approximately 175 chiefs and other members of the fire service attended a day-long Governor's Conference at the Gardner Auditorium in Boston to discuss home fire safety and dwelling inspection.

Massachusetts State Fire Marshal Edward P. Gilgun presided for the morning session and Chief Leo C. Driscoll of Boston handled the afternoon session. NFPA General Manager Percy Bugbee and NFPA President Chief Henry G. Thomas were the keynote speakers. Also on the morning program were James Kerivan, president, State Association, International Association of Fire Fighters; Boston's Fire Commissioner Timothy J. O'Connor; Massachusetts Commissioner of Public Safety J. Henry Goguen; and Governor Foster Furcolo. Reverend John J. McManmon, chaplain of the Boston Fire Department, delivered the invocation.

The afternoon featured a vigorous panel discussion with a great deal of participation from the audience. In general, this covered the many aspects and the practicality of making dwelling inspections and such subjects as the right of a fire department to inspect premises, and requirements of general laws with reference to inspections.

Taking part in the panel were Warren Y. Kimball, manager, NFPA Fire Service Department; Chief Eben N. Briggs, Duxbury Fire Department; Chief M. T. Cavanaugh, Great Barrington Fire Department; Chief John E. Clougherty, Boston Fire Department; Chief G. Palmer Holmes, Kingston Fire Department; Chief Albert W. Kimball, Hingham Fire Department; Edward P. Gilgun, state fire marshal; W. Howard McClellan, vice president, International Association of Fire Fighters; Chief Walter R. Murray, Weymouth Fire Department; Chief Joseph E. Scanlan, Lynn Fire Department; Chief Henry G. Thomas, International Association of Fire Chiefs; and Chief Leroy Trevett, Framingham Fire Department, president, Massachusetts Fire Chiefs' Association.

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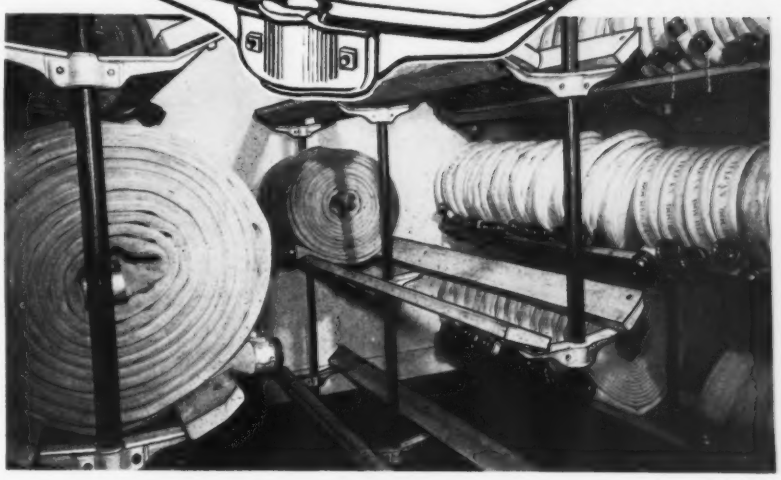
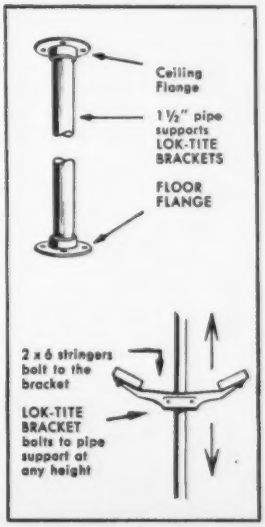
$3.65 F.O.B. WICHITA



Convert Waste Space To Valuable Storage!

Lok-Tite fire hose brackets provide storage racks in odd dimension areas where ready-made storage will not fit. Encourage good housekeeping practices . . . assure easy hose inspection and correct ventilation by building sturdy storage with Lok-Tite brackets approved by hose manufacturers and fire departments everywhere.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1½" pipe supports LOK-TITE BRACKETS
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2 x 6 stringers bolt to the bracket
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- Simple to install
- Easy to adjust
- Big load support

NFPA Fall Conference

ALL fire service members in midwestern States are invited to the NFPA Fall Conference in Des Moines, Iowa, November 11–13. Headquarters will be at the Hotel Fort Des Moines, where conference sessions will be held each morning and afternoon of the three days.

Traditionally, these fall meetings, held in various regions of the United States, feature a great deal of audience participation, particularly concerning fire department and fire protection problems of local interest. The programs are arranged to cover the topics that are of principal importance to the particular regional area.

It is through these meetings that fire department personnel can get the best insight into what the NFPA is and how it functions. In addition, these meetings bring together many specialists in the fire protection field, and the question periods usually lead to thorough analyses of fire protection problems of local significance.

The tentative program is shown at right.

Wednesday, November 11

MORNING SESSION, 9:30 A.M.

Talks on fire protection by Chief Henry G. Thomas, President of NFPA; General Manager Percy Bugbee; T. Seddon Duke, Chairman of the Board, NFPA; J. Ward Bush, Chief, Plant Protection Division, Caterpillar Tractor Company, Peoria, Illinois; and Robert C. Byrus, Director, Fire Service Extension, University of Maryland.

AFTERNOON SESSION, 1:30 P.M.

Panel discussion by NFPA Staff Engineers Miles E. Woodworth, Flammable Liquids; Clark F. Jones, Gases; and Frank Stetka, Electrical.

Panel on hospital fire safety with Chief Lester R. Schick, Davenport, Iowa; Roy Hudenburg, chairman, NFPA Committee on Hospital Operating Rooms; L. G. Matthews, International Acetylene Association; and Chief Robert T. Palmer, Minneapolis Fire Prevention Bureau.

Fire Protection Forum at 3:30 p.m. will present discussion and question periods on The New Electrical Code and Fire Safety, Frank Stetka, Electrical Field Service Engineer, NFPA, presiding; and Fire Extinguishers, Raymond M. Hill, Chairman, NFPA Committee on Fire Extinguishers, presiding.

Get-Together Party 5:30 to 7:30 p.m.

Thursday, November 12

MORNING SESSION, 9:30 A.M.

Talks by Harry J. Corcoran, Chief Engineer, Iowa Inspection Bureau; Chief Lynn C. Ray, North Park Fire Department, Rockford, Illinois; Norton T. Ames, Oregon, Wisconsin; and a skit on shopping center fire protection.

AFTERNOON SESSION, 1:30 P.M.

Greeting by Governor Herschel C. Loveless of Iowa.

Talks on rural fire safety by Russell E. Heston, Engineer, Farmers Mutual Reinsurance Company; Professor Henry Giese, Iowa State College; and Warren Y. Kimball, Manager, NFPA Fire Service Department and Secretary, NFPA Committee on Rural Fire Protection.

The Fire Protection Forum at 3:30 p.m. will feature discussion and questions on Lightning Protection presided over by R. L. Lloyd, Chairman, NFPA Committee on Lightning Protection; and Fire Detection and Alarm Systems, presided over by Boyd A. Hartley, Chairman, NFPA Committee on Signaling Systems and Thermostats.

Friday, November 13

MORNING SESSION, 9:30 A.M.

Talks on successful community fire prevention by Chief John Pavlic, West Milwaukee, Wisconsin; Ben Pitcher, Executive Vice President, Chamber of Commerce, Oshkosh, Wisconsin; Gunnar Berglund, Fire Control Director, Ford Motor Company, Dearborn, Michigan; Chief Wayne Swanson, Rockford, Illinois; and Emmett T. Cox, Chairman, NFPA Committee on Visual Education.

AFTERNOON SESSION, 1:30 P.M.

Talks by Chief Eugene W. Fields, Omaha, Nebraska; Fire Marshal Raymond M. Hill, Los Angeles, California; and Chester I. Babcock, Manager, NFPA Fire Record Department.

"WHY?" — a motion picture showing scenes of the Our Lady of the Angels School fire, December 1, 1958.

Better Hose Care-with CIRCUL-AIR
HOSE CONDITIONING EQUIPMENT
WASHERS • DRYERS • TURN-TABLES • STORAGE RACKS

ROTO-JET HOSE WASHER
AUTOMATICALLY
WASHES—RINSES—DRAINS HOSE

ROTO-JET Washes, Rinses, Drains hose thoroughly and quickly. Hose is self-propelled. Simple one-man operation. With or without detergents, ashes, glass and sludge are automatically scrubbed out and flushed away. Lengthens hose life. Foot-Pedal Operation.

FIRE HOSE DRYER

The patented, electrically operated Circul-Air hose dryer circulates pre-warmed fresh air through loosely coiled hose at the rate of 5 to 6 air changes per minute. No other drying method is so fast — so economical — so easy to use. The preferred dryer in over 5,000 leading Fire Departments.

ACCEPTED — APPROVED
RECOMMENDED

Approved by Underwriters' Laboratories . . . and Canadian Standards Association. Recommended by all leading fire hose manufacturers.

The fast, modern way to handle, store and load hose.

PORTO-RAK
MOBILE
HOSE STORAGE
AND
LOADING UNIT

Saves valuable space. Holds 1,800 ft. of 2½" hose — proportionately more of 1½" — in an 8 ft. space (when loading table is detached). Roll it right up to the truck for reloading — out of the way when not in use. Equipped with locking fiber-wheeled casters.

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...All Rockwood Turrets Discharge FogFOAM
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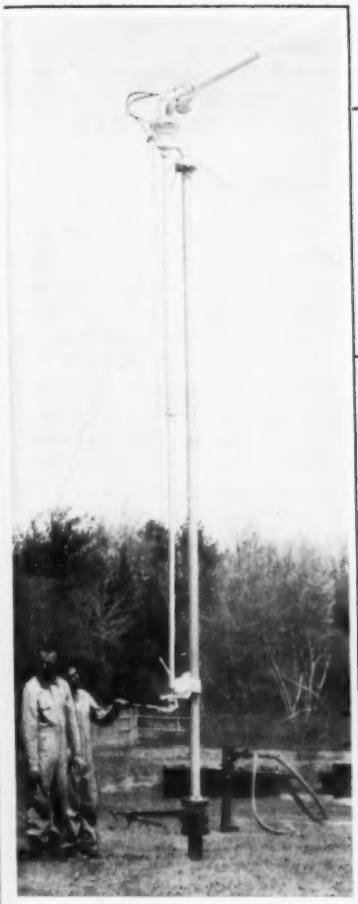
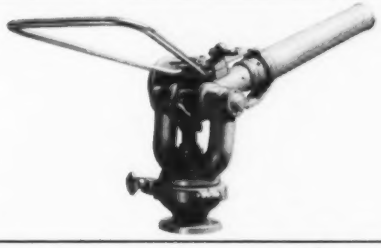
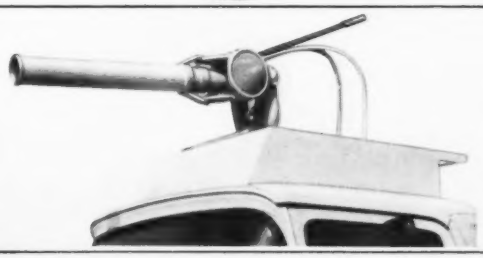


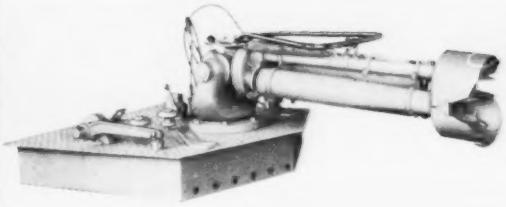
Extended Manual Control Type — Turret nozzles extend 10 to 20 feet above remote control station on deck or ground on standard units . . . greater remote extensions for special applications.



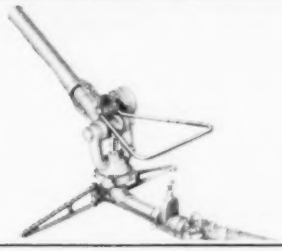
Direct Manual Control Type — Gives fire fighters "out-in-the-open" control from cab roof!



Remote Manual Control Type — Easily handled by man in driver's seat. Ideal for fast action!



Remote Hydraulic Control Type — Power-controlled from within the cab. Single and dual models. Widely used on air crash rescue fire-fighting trucks.



Portable Type — Off the truck and into action in seconds! Goes wherever a fire fighter can bring the proper hose line into action!

On the truck or on the ground, fire fighters can hit fires *harder* using ROCKWOOD Turrets! At airports and refineries . . . in municipalities and throughout industry . . . these advanced-design fire-fighting aids are constantly proving their ability to extinguish fires faster.

ROCKWOOD Turrets provide plenty of volume *and* versatility. What's more, all are easily adjustable on the fire line to meet changing fire conditions. Produced by the world's largest manufacturer of specialty Fire-Fighting Turrets, they're designed to give fire fighters an extra edge of efficiency on most types of fires. Get full details on the complete line of fire-fighting products. Write ROCKWOOD SPRINKLER COMPANY, Portable Fire Protection Division, 424 Harlow Street, Worcester 5, Massachusetts.

ROCKWOOD SPRINKLER COMPANY
A Division of The Gamewell Company
Engineers Water ... to Cut Fire Losses
Distributors in all principal cities.

Routing to Avoid Accidents

A RECENT fatal accident in which two fire trucks responding to the same fire collided again emphasizes the importance of having pre-planned and assigned routes for response to alarms. Such routing not only provides a safer response but may permit better disposition of apparatus on the fire ground so that the fire will be approached from front and rear and best possible use made of available hydrants.

Many well organized departments have long had response routes assigned for all first alarm companies and frequently pre-planning also includes assignments of hydrants giving the best water supply. Where the alarm is received over telephone or other means than a fire alarm box the nearest box number is transmitted so that companies may be expected to follow the prescribed routes. Where first alarm companies are out of quarters and other companies are filling in the dispatcher announces this fact over the air and urges all units responding to exercise caution.

Companies are frequently dispatched to alarms while out of quarters but in touch with headquarters by radio. In these situations they may not always be following their standard routes but if the company officers are alert to the air traffic they will know when any companies in their district are off their normal course.

Where it is necessary for companies coming from separate stations to merge into a single traffic artery when approaching the fire, the company first due on the assignment card should normally enter the intersection first and if it has not done so a later due company should enter the intersection with extreme caution. When sirens are sounding it is not always possible to hear the approach of other apparatus but it can be anticipated and usually the warning lights are visible. After all, the operator of any piece of apparatus must have the vehicle under control which means ability to stop in an emergency.

As a matter of fact, most fire apparatus drivers have an excellent safety record and a large percentage of the accidents which do occur result when some other vehicle runs into a fire truck. In these days there is not much excuse for apparatus of the same department colliding when responding to the same fire.

Relief Valve for Relay

IT IS well known that burst hose due to pressure surges is a common problem with long line pump to pump relays. The governors or relief valves on pumping engines, even when properly set and operating, frequently cannot adequately take care of pressure fluctuations which occur when nozzles are shut off quickly on long lines when two or more pumpers are operating at a relatively high combined pressure. This problem is overcome by using a line relief valve set to blow off at a relatively low predetermined pressure.

Chief A. Morrison Ennis of the Mortlake Fire Company of Brooklyn, Connecticut (member of the NFPA Committee on Rural Fire Protection) has given this

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U-182A RESCUE UNIT

- Booster Reel
- Water Tank ● Water Pump
- Chrome Plated Railings
- ¾ Length Seats
- Available in CA. (Shown 60" CA)
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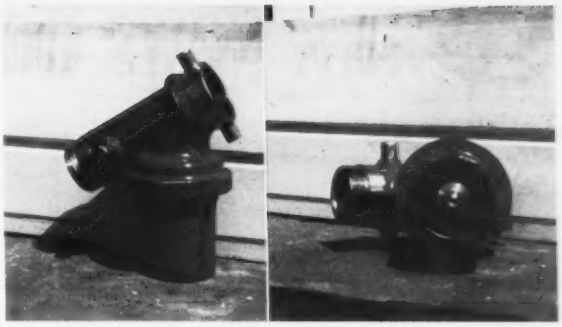
Also a complete line of compact and versatile Fire, Fire-Crash, Rescue and Emergency Units and Special Built Fire Bodies. Finest materials and workmanship, extra-rugged construction and original modern design. Compartments arranged for handy stowage of fire fighting, first aid and life saving equipment, helmets, rain gear, tools, tanks, portable pumps and generators, etc.

Write for FREE Literature

problem considerable study based upon practical experience at country fires. Reading the British magazine *Fire*, Chief Ennis was impressed by an advertisement by the Knowsley Cast Metal Company Ltd. of Manchester, England, which described their "Titan Nurse Relay Relief Valve." He secured one of these valves equipped with American National Standard fire department hose thread and, in practice, it appears to be just what the doctor ordered.

Where only one relief valve is available it is placed in the line on the intake side of the pump nearest to the fire. Without necessarily waiting for the relay to be completed the supply pump charges the line to the relief valve clearing all of the air out of the line. When water pressure reaches 10 psi at the valve it opens and discharges so that excessive pressure is avoided.

When another pumper is being supplied by the line the valve is closed whenever water is being moved fast enough to keep the pressure below 10 psi on the supply side even though the supply engine may be working at 150 to 200 psi and may be moving considerable quantities of water. But when a nozzle is closed and the pressure starts to build up the relief valve dumps the unwanted water before damage can be done to the hose. As fire fighters know, pump pressure relief controls can only limit pump discharge pressure which, when supplying long lines, may be entirely too high when the nozzle is closed. In other words, instead of having the pressure control operate at say 150 psi, it operates at 10 psi adding a considerable factor of safety without interfering with the delivery of water which the second pump can use because as soon as the water starts flowing through the discharge hose the "Titan Nurse Relay Relief Valve" closes.



(*Left*) The "Titan Nurse Relay Relief Valve" manufactured by the Knowsley Cast Metal Company Ltd. of Manchester, England, fitted with 2½-in. American National Standard fire hose threads. When pressure of the water passing through the valve exceeds 10 psi it discharges through the pressure relief diaphragm. (*Right*) View showing the pressure relief diaphragm. In British service the valve is fitted with 3-, 4-, or 5½-in. suction fittings, as specified.

Chief Ennis reports that there are a number of other corollary advantages in the use of the relief valve which he did not originally anticipate. The job of maintaining effective pressure between pumps is considerably simplified and time is saved in placing an effective relay operation in service.

ELIMINATE WATER AND SMOKE DAMAGE

WITH Fulton COTTON MILLS SHUREDRY® GREEN-BAK

SALVAGE COVERS

Shuredry is the *only* canvas cover with waterproofed seams . . . the *only* canvas cover which features the exclusive Fulton water-repellent finish, applied by pressure impregnation. Also mildew-resistant, Shuredry is sewn only with rot-resistant thread. ■ Meets specifications of National Board of Fire Underwriters. Approved by Associated Factory Mutual Fire Insurance Companies. ■ COMPETITIVELY PRICED. Get the best! Order today for fast delivery! Fulton Nylon Salvage Covers also available!

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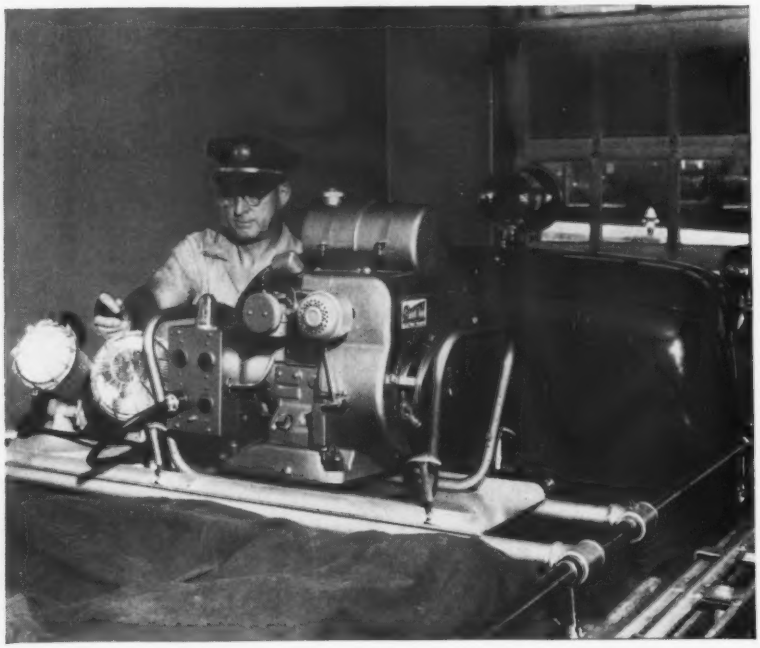
Onan NEWS REPORT



Department uses two Onan plants to fight fires, and hurricanes, too!

The 1,500-watt portable Onan plant mounted on the rig above is strictly a fire-fighting tool for the Oxford, North Carolina department. Quickly detachable from the truck mount, it can be carried right up to the fire site to operate floodlights and tools.

The Onan 10,000-watt standby plant below helps fight fires and other disasters. In addition to assuring power for police radio, headquarters lighting, and the air-compressor fire signal system, it also serves the local Civil Defense organization, guaranteeing radio communications when a hurricane or other disaster strikes the community.

10KW PLANT HANDLES ALL ESSENTIAL NEEDS

Radio, air compressor and lights are on the emergency circuit. A flip of the switch starts the plant. Onan also supplies automatic start-stop transfer controls for permanent installations where personnel are not always on duty.

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Onan ELECTRIC PLANTS

Dates to Remember

Arizona: The Seventh Annual Arizona State Fire Training School will be held in Phoenix, October 15–17 at the Phoenix College. Write to Chief Jake Siken, Training Director, 49 South 1st Street, Phoenix, for information.

Arkansas: Regional fire schools will be held in Jonesboro, October 26–November 5 and Magnolia, November 9–19. Write to Whit Murphy, Registrar, Arkansas State Fire College, State Education Building, Little Rock.

Indiana: The Second Annual Fire Inspectors' Course will be held at Purdue University, October 27–29. Write to Professor Shelby Gallien, Director, Public Safety Institute, Purdue University, Lafayette.

Kansas: The 30th Annual Kansas Fire School will be held in Lawrence, October 19–22. For further information, write to Clyde A. Babb, Director, Kansas Fire School, University of Kansas, Lawrence.

Michigan: An Industrial Fire Control Seminar is scheduled for November 9 and 10 at the University of Michigan in Ann Arbor. For details, write to Francis A. Hartman, Supervisor Firemanship Training, The Civil Defense and Disaster Training Center, University of Michigan North Campus, 1820 Beal Avenue, Ann Arbor.

Ontario: A County Mutual Aid Fire Forum will be held at the 1959 Ontario Fire College in Gravenhurst, October 19–23.

Pennsylvania: A fire department pump school is scheduled for October 19. Special training courses will be given in ladder, rescue and salvage, November 16 and in advanced fire fighting, October 26. Write to Art Espey, Director, Pennsylvania State Firemen's Training School, Box 631, Lewistown.

Tennessee: Training in industrial fire protection will be given at the Tennessee State Fire Training Center in Murfreesboro, October 14–16. For further information, write to Homer S. Elkins, Instructor-Coordinator, Fire Service Training, 215 Chestnut Street, Chattanooga.

Florida State Fire Chiefs

THE annual convention of the Florida State Fire Chiefs' Association is scheduled to be held at the Hotel Robert Meyer in Jacksonville on October 13. The convention will precede the Fire Prevention Conference, October 14–15. For further details, write to Chief Frank C. Kelly, Bureau of Fire Prevention, 39 East Adams Street, Jacksonville 2, Florida.

DARLEY

Champions

from the SOUTH* to the NORTH POLE**

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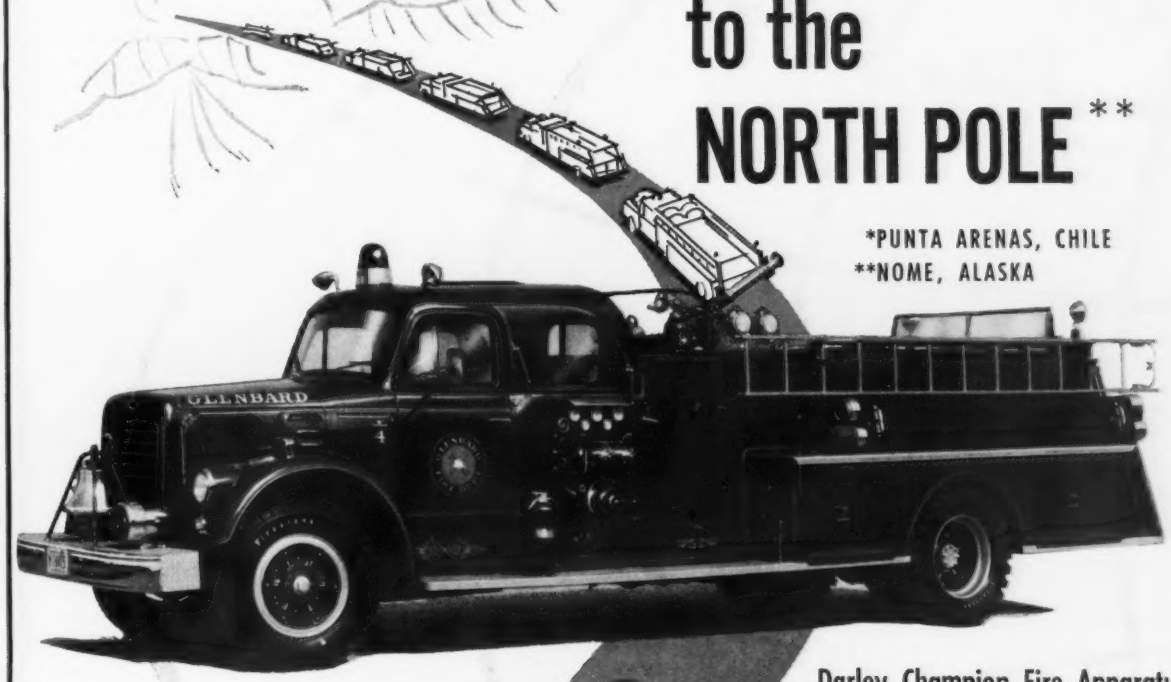

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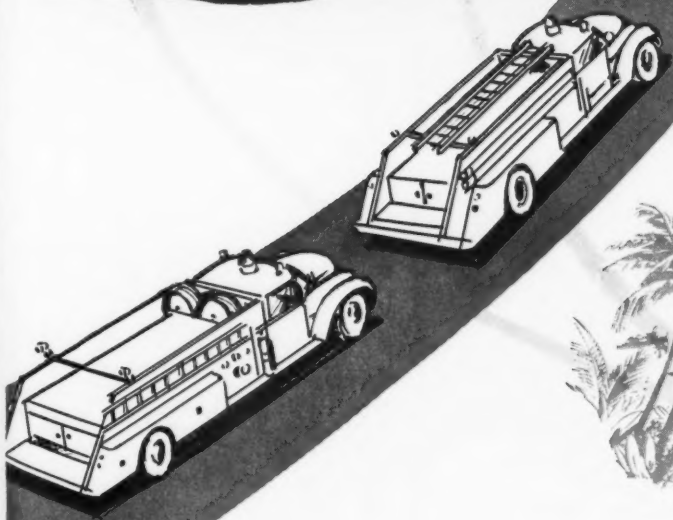

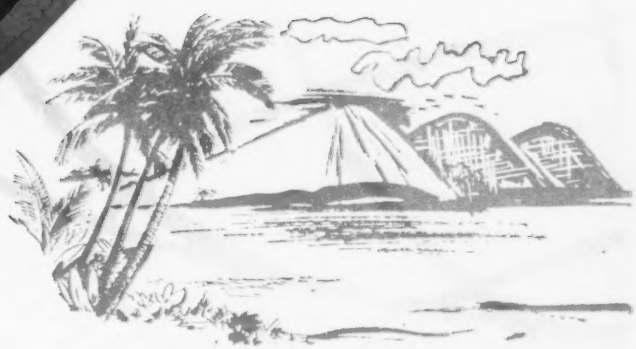

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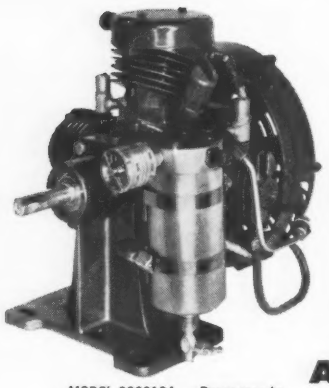

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Unique "Breathing Doll"

RECENTLY National Cylinder Gas Division of Chemetron Corporation developed a "breathing doll" as part of a demonstration unit for resuscitators. The doll has visible plastic lungs which breathe when oxygen is administered. At right above is ambulance driver Robert J. Koceja about to apply a resuscitator mask to the doll. At left is Ed Rostkowski, manager of the Milwaukee County Ambulance Service.

Changes in Buffalo

FOUR of the six division fire chiefs of the Buffalo, New York, Fire Department were retired on August 4 after long and distinguished careers. They are Raymond Schnorr, Joseph Fick, Leo Sullivan and Anthony Healy. These men were appointed Division Chiefs in 1954 when the various battalions were grouped into two fire fighting divisions. All reached 65 years of age and were eligible for disability pensions. The Civil Service list has been established for filling the four vacancies. At this writing Commissioner William Daly has not announced the appointment of the new division chiefs.

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Membership Report

NFPA Welcomes the following chiefs and fire departments who joined the Association during August and September. Are you encouraging fire departments in your state to join NFPA? We will send you membership application forms on request.

If your fire department is scheduled to renew its NFPA membership, in the next few months, this is a good time to find out how many of your men want subscriptions to FIREMEN. Subscriptions can only be obtained through membership in the Association and must start with the date of renewal. Be sure to send the list of names with your membership renewal order.

Arkansas: Little Rock Fire Department, Little Rock.

California: Union City Fire Department, Decoto.

Connecticut: New Canaan Fire Company No. 1, New Canaan; Shelton Fire Department, Shelton; Thomaston Volunteer Fire Department, Thomaston.

Georgia: Athens Fire Department, Athens.

Illinois: Bloomington Fire Department, Bloomington; Chrisman Fire Protection District, Chrisman; Chief Edward L. Diggle, Gridley Volunteer Fire Department, Gridley; Sunnycrest Volunteer Fire Department, Homewood; Rolling Meadows Volunteer Fire Department, Rolling Meadows.

Iowa: Manning Fire Department, Manning.

Kansas: Independence Fire Department, Independence.

Maryland: Pocomoke Volunteer Fire Department, Pocomoke City.

Missouri: Sikeston Fire Department, Sikeston.

New Jersey: Division of Fire, Township of Edison, Edison; North Plainfield Fire Department, North Plainfield; Union Beach Fire Company No. 1, Union Beach.

New York: Castorland Fire Company, Castorland; Clinton Fire Department, Clinton; Elmira Heights Fire Department, Elmira Heights; Halesite Fire District, Huntington; Chief Walter R. Bell, New Rochelle; Ouaguaga Fire Company, Ouaguaga; Fermont Fire Department, Ramapo.

North Carolina: Chief C. A. Precythe, Faison Fire Department, Faison.

Nova Scotia: Pugwash Fire Department, Pugwash.

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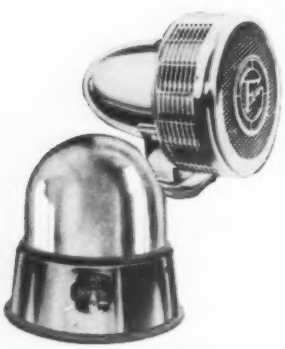

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National Electrical Code

AS ANNOUNCED last month, the 1959 edition of the National Electrical Code is now available. This is published as a pocket size, paper-bound book with a list price of $1.00 and also as Volume V of the National Fire Codes, a cloth-bound, desk reference book, 5½- by 8½-in. in size with 768 pages. The paper-bound edition is 4¾- by 7¼-in. in size with 528 pages.

This new edition is of tremendous importance to electrical inspectors. A complete re-editing of the previous (1956) edition brought a new numbering system, importance sequencing of the sections, changes in intent in 70 sections, a new index, and a cross index between the 1956 and 1959 editions.

Copies of the paper-bound edition ($1.00 each) or the cloth-bound Volume V ($7.00 each) can be obtained from the NFPA Publications Department, 60 Batterymarch St., Boston 10, Massachusetts.

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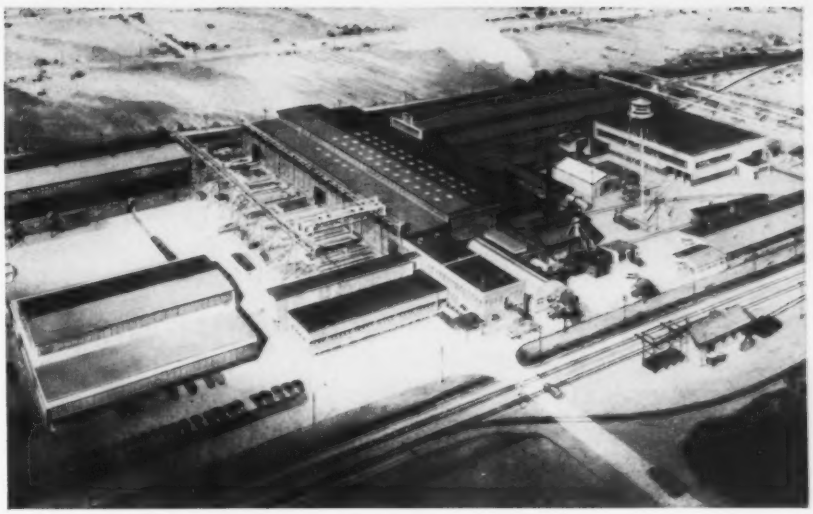

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Manual for Rescue Breathing

A WELL prepared, pocket size manual titled, "Resuscitation of the Unconscious Victim" has been published by Charles C. Thomas, 301-327 East Lawrence Avenue, Springfield, Illinois. Authors of the new book are Dr. Peter Safar, Chief, Department of Anaesthesiology, Baltimore City Hospitals, and Captain Martin C. McMahon, of the Baltimore, Maryland, Fire Department Ambulance Service.

The manual is written primarily for those concerned with the application and teaching of first aid. Most of the recommendations are based on the authors' experience with actual resuscitations and on research conducted at the Baltimore City Hospitals. The book has a number of simple and effective illustrations showing the administration of mouth-to-mouth artificial respiration. Section One is an introduction which explains asphyxia and the comparison of mouth-to-mouth and other manual methods of artificial respiration. Section Two shows in detail how to resuscitate an unconscious person. Section Three deals with how to apply artificial respiration with intermittent positive pressure breathing. Section Four covers a number of miscellaneous items such as oxygen inhalation, drowning, injuries, resuscitation of the newborn and other topics. The book also has a glossary, a bibliography and a tear-out sheet showing a diagram for quick instruction of mouth-to-mouth breathing.

Copies of "Resuscitation of the Unconscious Victim" can be obtained for $1.75 each from the publisher at the above address.

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EQUIPMENT NEWS

New Communications Unit

Clear, effective communication with men in smoky basements, on aerial ladders and other dangerous locations is now possible with 3-D Sound Power System, according to *Boma Corporation*, 718 Norman Place, Westfield, New Jersey. The unit can be attached to the face mask of breathing apparatus or used as a head and chest set. Get full information today from manufacturer.

•

MS Co. UtiliPort, is the name of a new lightweight folding stretcher weighing 7½ pounds and supporting more than 400 pounds. Write to *Medical Supply Company*, Rockford, Illinois. . . . *Waterous Company* has appointed H. & H. Truck Tank Company, 725 Tonnele Avenue, Jersey City, New Jersey, to install and service Waterous pumps in the manufacture of its fire apparatus and special service vehicles. . . . For emergency escape from dwellings, *Davis Safety Products*, 6501 Cedar Avenue, Cleveland 3, Ohio, makes "Wind-O-Scape," a lightweight, all metal collapsible ladder with U-shaped rungs holding the steps away from the side of the building. . . . Three CO_2 portable extinguishers, featuring new hose and discharge nozzle assemblies (UL labeled) in 10-, 15- and 20-pound capacities, are announced by *Walter Kidde and Company, Inc.*, 751 Main Street, Belleville 9, New Jersey.

For brush and grass fire fighting, quick-acting and inexpensive, try the Ranger fire fighting broom made by *Perfex*, 47 Dinsmore Place, Brooklyn 8, New York. . . . "Rescue Breathing" is the medically-endorsed teaching film that demonstrates the new mouth-to-mouth method for reviving victims of drowning, choking, gas asphyxiation and suffocating from other causes. For complete details, write to *American Film Producers*, Dept RB-2, 1600 Broadway, New York 19, New York.

•

A complete aerial ladder communications system, "The Towercom," custom built to your specifications, is marketed by *Fi-Tronics Engineering*, 507 Beechtree Lane, Wayne, Pennsylvania. . . . Many departments distribute cards reading "In case of fire, dial . . ." to homes in their communities. A new, low cost decal for this purpose is now available through *U. S. Decal Company*, P. O. Box 193, Williamsville, New York. . . . *D. B. Smith and Company*, Utica, New York, announce they have improved their Indian Fire Pumps so that they will not bind or work hard, no matter how long the Indian is used. . . . Industrial readers will find the 1959 catalog on Kinnear steel rolling fire doors valuable. For your free copy, write to *Kinnear Manufacturing Company*, 820-870 Fields Avenue, Columbus 16, Ohio, or 1725 Yosemite Avenue, San Francisco 24, California.

•

New Handbook on Tubes

General Electric Company Receiving Tube Department at Owensboro, Kentucky, announces a new receiving tube and television picture tube handbook. It is available through authorized distributors. This 260-page document lists a total of 1,392 receiving and special-purpose tubes and 399 television picture tubes with maximum rating and operation data. This book will be valuable for communications officers of municipal fire departments. It is available free from local distributors of General Electric tubes or from the company at the above address.

(*Continued on next page*)

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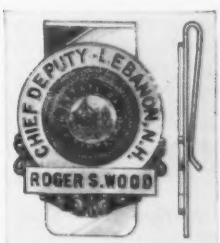

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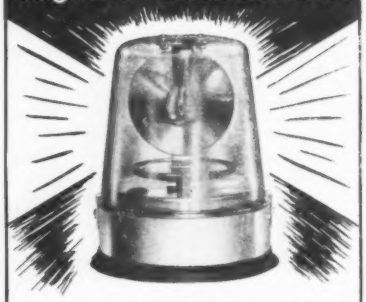

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This new Fire-Master safety boot includes a flexible anti-puncture midsole, plus a steel toecap, to protect the fire fighters against falling heavy objects and sole punctures. Yellow knee stripe and sole give better visibility in smoke and dark. King height and boot style are available in sizes 6 to 12 from *Lehigh Safety Shoe Company, Inc.*, Emmaus, Pennsylvania.

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Plectron Corporation, Overton, Nebraska, announces a new line of fire service radio tone alerting receivers with longer range reception (up to 30 miles), lower maintenance costs and more efficiency. Another new feature is a choice of cabinet colors — red, ivory and grey hammertone. Also included in the line is a new tone generator, offering eight different tones enabling a department to alert several different groups individually.

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New "Porta-Chief" Unit

"Porta-Chief" is the new transistor-powered, portable voice amplifier unit with wide angle coverage of up to two acres developed by *Audio Equipment Company, Inc.*, P. O. Box 192, Port Washington, New York.

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